walvoil

SD8 - DLS8

Sectional directional control valves

TECHNICAL CATALOGUE



Features

SD8

Simple, compact and heavy duty designed sectional valve from 1 to 14 sections for open and closed centre hydraulic systems.

- Fitted with a main pressure relief valve and a load check valve on every working section.
- Available with parallel, tandem or series circuit.
- Optional carry-over port.
- A wide range of port and circuit valves.
- Intermediate sections for several types of circuit.
- Available manual, pneumatic, hydraulic, electro-hydraulic, and remote with flexible cable spool control kits.
- Diameter 18 mm *(0.71 in)* interchangeable spools.

DLS8

These Load-Sensing directional valves are fitted with compensator in the inlet section.
They are made using the SD8 working sections.
Theu can be used both with fixed displacement pumps (open centre version) and variable displacement pumps (closed centre version).
Ports valves and control kits are the same as SD8 directional valve.

Additional information
This catalogue shows the product in the most standard configurations.
Please contact our Sales Dpt. for more detailed information or special requests.

WARNING!
All specifications of this catalogue refer to the standard product at this date.
Walvoil, oriented to a continuous improvement, reserves the right to discontinue, modify or revise the specifications, without notice.

WALVOIL IS NOT RESPONSIBLE FOR ANY DAMAGE CAUSED BY AN INCORRECT USE OF THE PRODUCT.

2nd edition June 2018

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DLS8

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Working conditions

This catalogue shows technical specifications and diagrams measured with mineral oil of 46mm²/s *(46 cSt)* viscosity at 40°C *(104°F)* temperature.

Nominal flow rating		90 l/min	*24 US gpm*
Max. pressure		315 bar	*4600 psi*
Back pressure (max.)	on outlet T port	25 bar	*360 psi*
Internal leakage A(B)⇒T (standard)	Δp = 100 bar	3 cm³/min	*0.18 in³/min*
Fluid		Mineral base oil	
Fluid temperature	with NBR (BUNA-N) seals	from -20°C to 80°C	*from -4°F to 176°F*
	with FPM (VITON) seals	from -20°C to 100°C	*from -4°F to 212°F*
Viscosity	operating range	from 15 to 75 mm²/s	*from 15 to 75 cSt*
	min.	12 mm²s	*12 cSt*
	max.	400 mm²s	*400 cSt*
Max. contamination level		-/19/16 - ISO 4406	*NAS 1638 - class 10*
Environmental temperature for working conditions		from -40°C to 60°C	*from -40°F to 140°F*
Tie rod tightening torque (wrench 13)		30 Nm	*22 lbft*

NOTE - For different conditions please contact our Sales Dept.

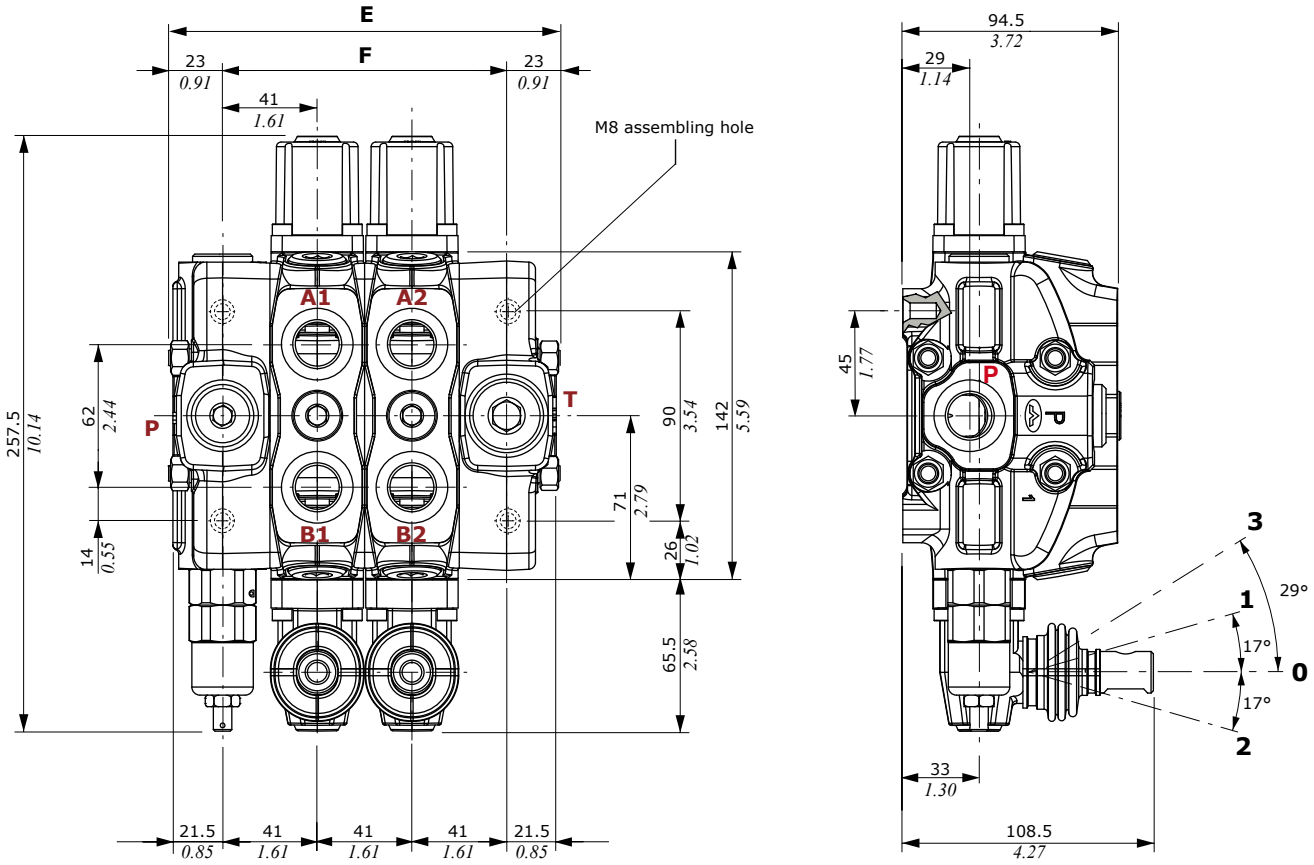
Standard threads

REFERENCE STANDARD					
		BSP	**UN-UNF**	**METRIC**	**NPTF**
THREAD ACCORDING TO		ISO 228/1	ISO 263	ISO 262	ANSI B1.20.3
		BS 2779	ANSI B1.1 unified		
CAVITY DIMENSION ACCORDING TO	ISO	1179-1	11926-1	9974-1	
	SAE		J1926-1	J2244	J476a
	DIN	3852-2, X or Y shape		3852-1, X or Y shape	

PORT THREADING			
MAIN PORTS	**BSP**	**UN-UNF**	**METRIC**
P inlet	G 1/2	7/8-14 (SAE 10)	M18x1.5
A and **B** ports	G 1/2	3/4-16 (SAE 8)	M18x1.5
T outlet and **C** carry-over	G 3/4	7/8-14 (SAE 10)	M22x1.5
PILOT PORTS			
Hydraulic	G 1/4	9/16-18 (SAE 6)	G 1/4
Pneumatic	NPTF 1/8-27	NPTF 1/8-27	NPTF 1/8-27

NOTES - AC/SN and AD/VP inlet sections and mid return manifold sections have different threads. See page 8 and page 44.

Dimensional data



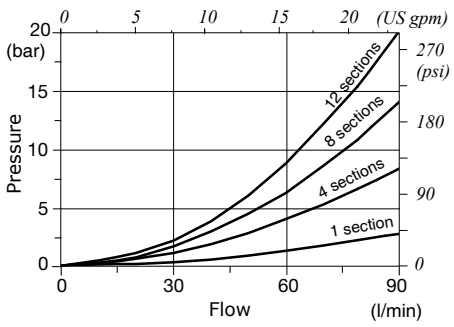
NOTE - Drawings and dimensions are referred to **BSP** thread configuration.

TYPE	E		F		Weight	
	mm	*in*	mm	*in*	Kg	*lb*
SD8/1	128	*5.04*	82	*3.23*	7.2	*15.9*
SD8/2	169	*6.65*	123	*4.84*	10.5	*23.1*
SD8/3	210	*8.27*	164	*6.46*	13.8	*30.4*
SD8/4	251	*9.88*	205	*8.07*	17.1	*37.7*
SD8/5	292	*11.5*	246	*9.69*	20.1	*44.3*
SD8/6	333	*13.11*	287	*11.3*	23.4	*51.6*
SD8/7	374	*14.72*	328	*12.91*	26.7	*58.9*

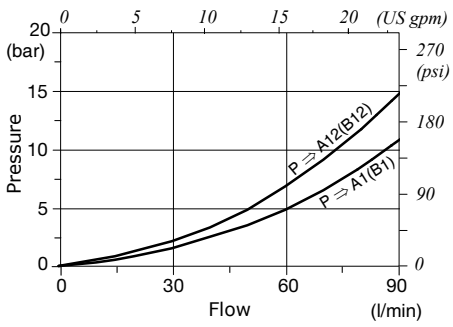
TYPE	E		F		Weight	
	mm	*in*	mm	*in*	Kg	*lb*
SD8/8	415	*16.34*	369	*14.53*	30	*66.1*
SD8/9	456	*17.95*	410	*16.14*	33.3	*73.4*
SD8/10	497	*19.57*	451	*17.74*	36.6	*80.7*
SD8/11	538	*21.18*	492	*19.37*	39.9	*88*
SD8/12	579	*22.79*	533	*20.98*	43.2	*95.3*
SD8/13	620	*24.41*	574	*22.60*	46.5	*102.5*
SD8/14	661	*26.02*	615	*24.21*	49.8	*109.8*

Performance data

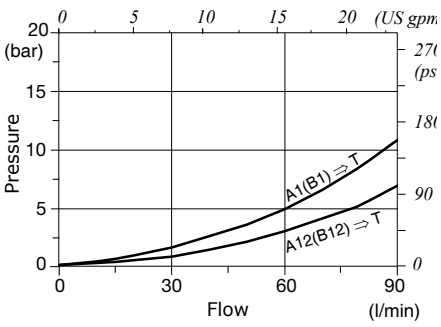
P ⇒ T pressure drop



P ⇒ A(B) pressure drop



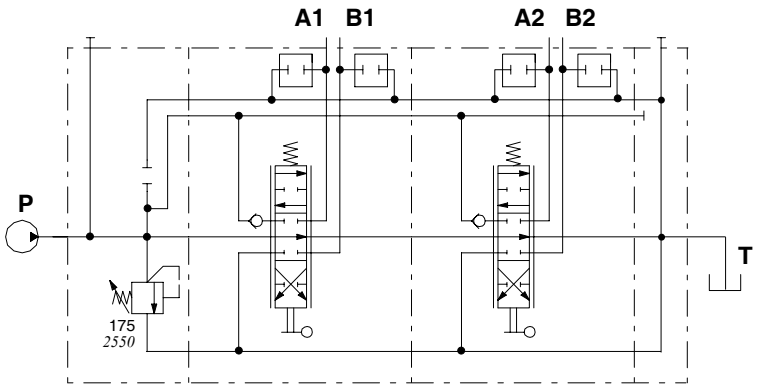
A(B) ⇒ T pressure drop



Hydraulic circuit

Parallel circuit

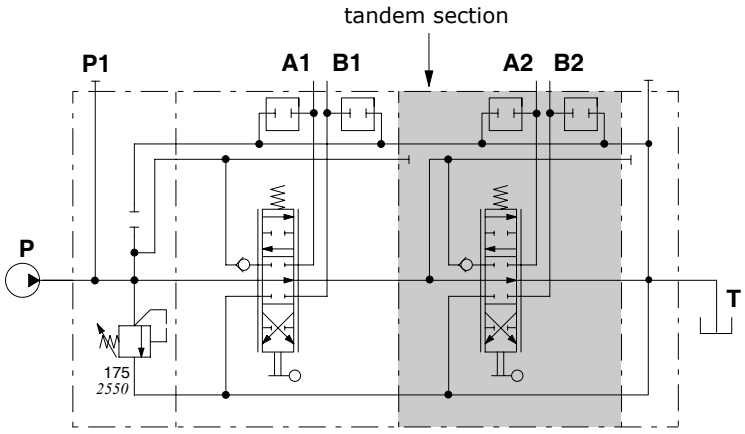
Standard configuration with open centre and side inlet and outlet.



Description example:
SD8/2/AC(YG3–175)/18L/18L/RC

Series-parallel (tandem) circuit

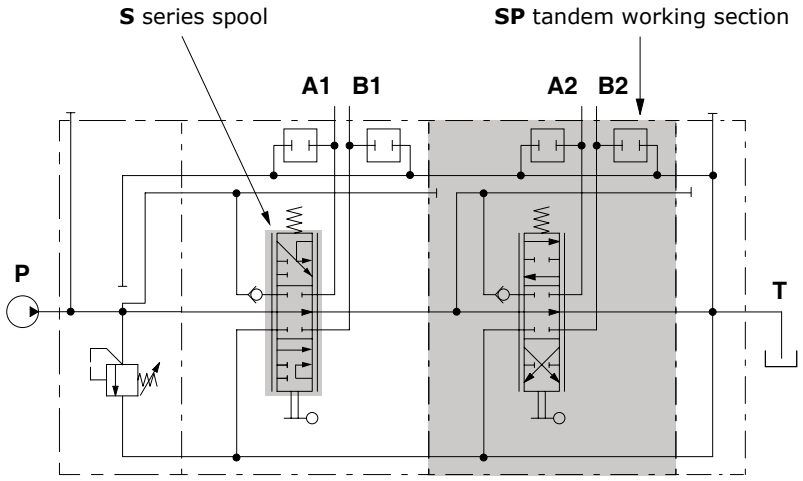
A special working section kit is required.
Tandem section is fed by the free flow pressure line; it is excluded when an upstream section is operated.



Description example:
SDS8/2/AC(YG3–175)/18L/**SP**-18L/RC

Series circuit

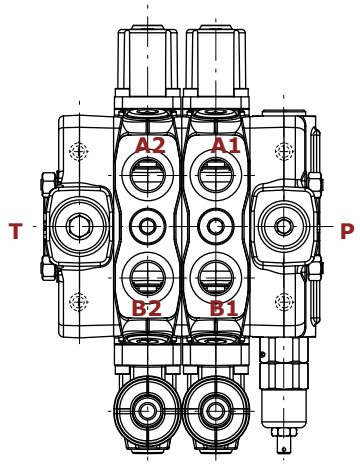
It is obtained by mounting a 1S series spool (or 2S, see pages 22 and 26) on a standard parallel section.
The next section must be a series-parallel (tandem) one.

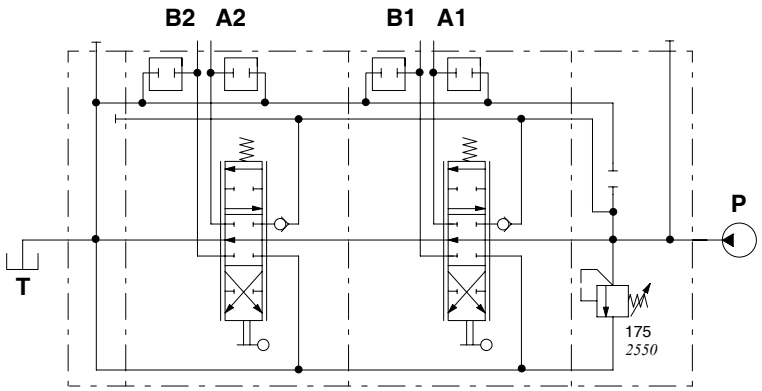


Description example:
SD8/2/AC(YG3–175)/**1S**8L/**SP**-18L/**S**-18L/RC

NOTE – The flows P –> A and P –> B, on the series spool, are reversed.

Directional valve with right inlet





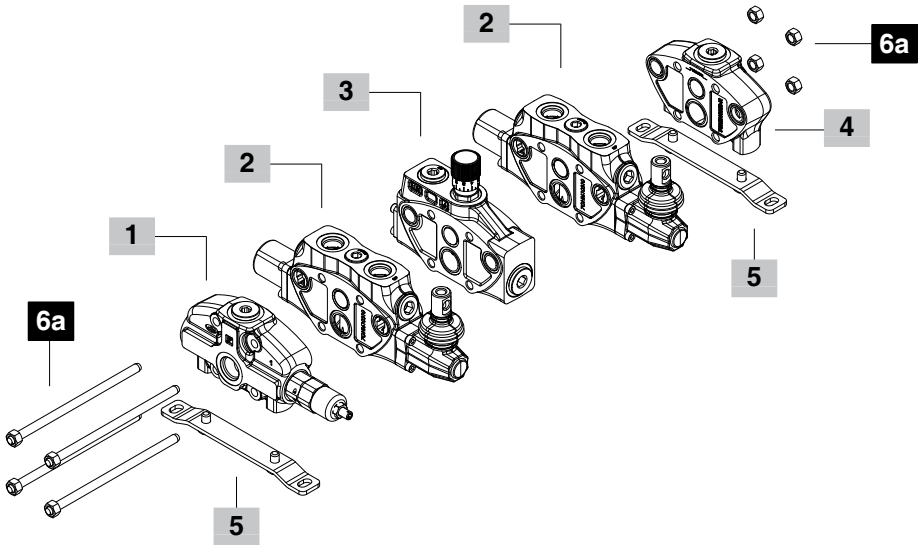
Description example:
SD8/2/**BC**(YG3–175)/18L/18L/RC

Complete section ordering codes

Standard configuration with side inlet and outlet

SD8 / 2 / AC(YG3-175) / 18L / DFG / 18L / RC - .... - STAF

Nr. of working sections: 2 | 1: AC(YG3-175) | 2: 18L | 3: DFG | 4: 18L | 10: RC | 5: STAF



1 Inlet section * page 12

TYPE	CODE	DESCRIPTION
AC(YG3-175)	613201007	Side inlet with direct pressure relief valve
AC(XG-120)	613201019	Side inlet with pilot operated pressure relief valve
AC(SV)	613201020	Side inlet with valve blanking plug
AC(YG3-120)SN	613201150	Side inlet with flow regulator, G3/4 P port
AD/VP(LSZ-230)ELN-12VDC	613201035	Upper inlet with priority valve, G3/4 P and T ports

For special configuration please see page 12

2 Working section * page 22

TYPE	CODE	DESCRIPTION
Q-18L	613151001	Parallel circuit, double acting spool with spring return, lever control
P-18L	613101001	As previous one, arranged for port valves ("P" omitted in description)
P-1S8L	613111001	As previous one, with series circuit spool ("P" omitted in description)
SP-18L	613121002	As previous one, with series-parallel (tandem) circuit
P-1M8IM	613101022	Parallel circuit, arranged for port valves, double acting spool, proportional hydraulic control

3 Intermediate section page 44

TYPE	CODE	DESCRIPTION
DFG	613410011	Pressure compensated flow divider section
EI1(YG2-125)	613421010*	With direct overpressure relief valve
EI2(YG3-175)	613421020*	With direct overpressure relief valve and auxiliary inlet

4 Outlet section * page 47

TYPE	CODE	DESCRIPTION
RC	613300110	With side outlet
RD	613300112	With upper outlet
RE	613300111	With upper outlet and side carry-over sleeve
RK	613300120	With upper outlet, closed centre
RV	613300122	With back pressure valve **the combination with electro-hydraulic control is required**

5 Fixing bracket page 64

TYPE	CODE	DESCRIPTION
STAF	5STA125190	Brackets with fixing screws

6a Assembling kit

CODE	DESCRIPTION
5TIR108128	Tie rod kit for 1 working section directional valve
5TIR108169	Tie rod kit for 2 working section directional valve
5TIR108210	Tie rod kit for 3 working section directional valve
5TIR108251	Tie rod kit for 4 working section directional valve
5TIR108292	Tie rod kit for 5 working section directional valve
5TIR108333	Tie rod kit for 6 working section directional valve
5TIR108374	Tie rod kit for 7 working section directional valve
5TIR108415	Tie rod kit for 8 working section directional valve
5TIR108456	Tie rod kit for 9 working section directional valve
5TIR108497	Tie rod kit for 10 working section directional valve
5TIR108538	Tie rod kit for 11 working section directional valve
5TIR108579	Tie rod kit for 12 working section directional valve
5TIR108620	Tie rod kit for 13 working section directional valve
5TIR108661	Tie rod kit for 14 working section directional valve
Assembling kit for VP inlet section	
5TIR108137	Tie rod kit for 2 working section directional valve
5TIR108179	Tie rod kit for 3 working section directional valve
5TIR108219	Tie rod kit for 4 working section directional valve

For different number of working section please contact our Sales Dept.

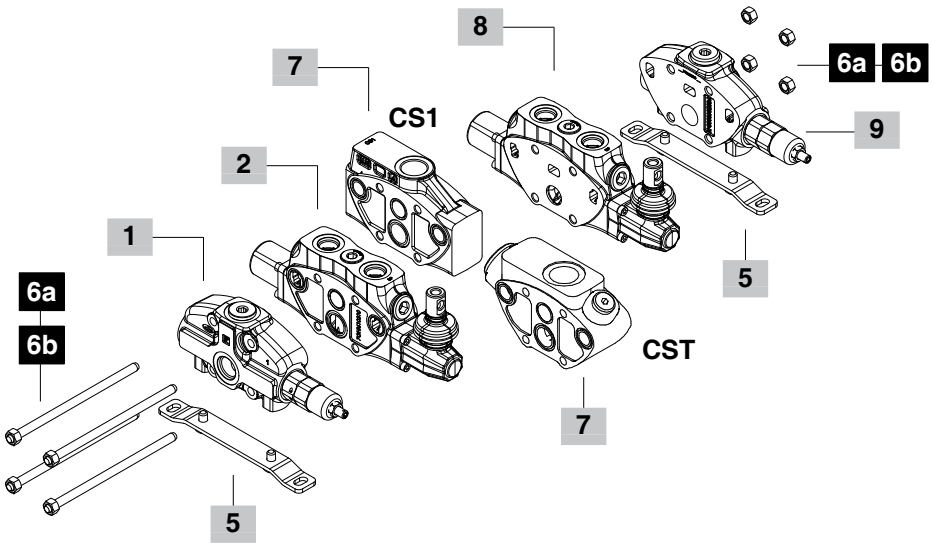
NOTE (*) – Codes are referred to **BSP** thread.

Complete section ordering codes

Configuration with 2 side inlets and mid return manifold

SD8 / 2 / AC(YG3-175) / 18L / CS1 / ED-18L / BC(YG3-175) - .... - STAF

Nr. of working sections	1	2	7	8	9	10	5



6b Assembling kit

CODE	DESCRIPTION
5TIR108260	Tie rod kit for 3 working section directional valve (+CST)
5TIR108301	Tie rod kit for 4 working section directional valve (+CST)
5TIR108342	Tie rod kit for 5 working section directional valve (+CST)
5TIR108382	Tie rod kit for 6 working section directional valve (+CST)
5TIR108424	Tie rod kit for 7 working section directional valve (+CST)
5TIR108465	Tie rod kit for 8 working section directional valve (+CST)
5TIR108506	Tie rod kit for 9 working section directional valve (+CST)

7 Return manifold * page 46

TYPE	CODE	DESCRIPTION
CS1	613401010	Mid return manifold with G3/4 outlet port
CST	613401400	Mid return manifold with G1 outlet port

For **CS1** type **6a** assembling kit is required; for **CST** type **6b** assembling kit is required.

8 Right inlet working section *

TYPE	CODE	DESCRIPTION
Q-ED-18L	613151003	Parallel circuit, without arrangement for port valves, double acting spool with spring return, lever control
P-ED-18L	613101024	As previous one prearranged for port valves ("P" omitted in description)
P-ED-1S8L	613101133	As previous one with series circuit spool ("P" omitted in description)
SP-ED-18L	613121003	As previous one with series-parallel (tandem) circuit

9 Complete right inlet cover *

TYPE	CODE	DESCRIPTION
BC(YG3-175)	613201009	Side inlet with direct pressure relief valve
BC(XG-120)	613201133	Side inlet with pilot operated pressure relief valve
BC(SV)	613201134	Side inlet with valve blanking plug

10 Valve threading

Specify only if it is different from BSP standard (see page 4)

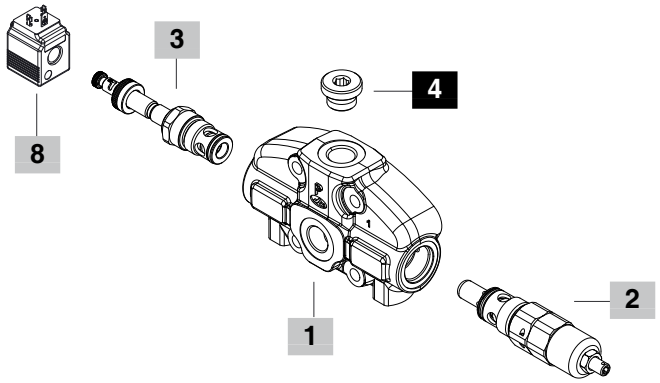
NOTES (*) – Codes are referred to **BSP** thread. Inlet sections and working sections for right inlet are different from the standard (see ref. **1** and **2**) because of different component assembling.

Part ordering codes

FE SD8 / AC (YG3 - 175) ELTW - ..... - 12VDC

1 — 2 — 3 — 7 — 8

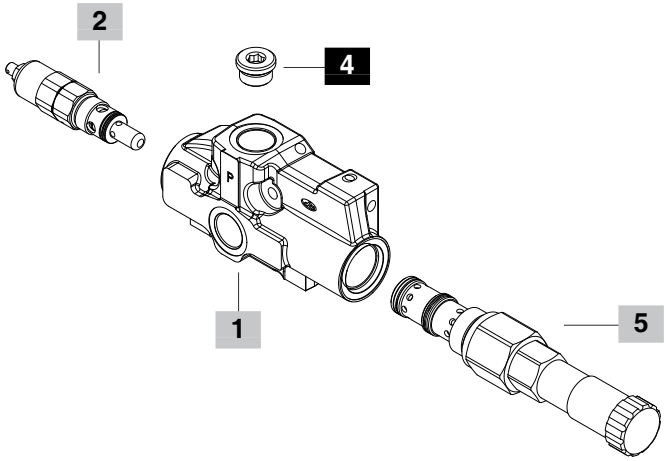
Valve setting (bar)



FE SD8 / AC (YG3 - 175) S N .....

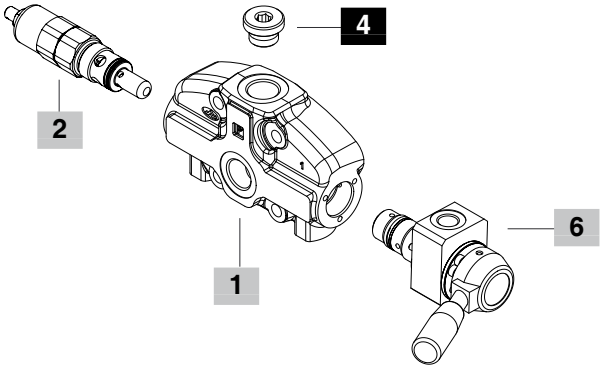
1 — 2 — 1 — 5 — 7

Valve setting (bar)



FE SD8 / AC (YG3 - 175) R2 .....

1 — 2 — 6 — 7



Part ordering codes

1 Inlet cover body * page 13

TYPE	CODE	DESCRIPTION
AC	3FIA108301	Standard body
AC/SN	3FIA108375	Arranged for flow regulator
AC/R2	3FIA108312	Arranged for rotary commutation

2 Inlet relief valve options page 17

Standard setting is referred to 10 l/min *(2.6 US gpm)*.

TYPE	CODE	DESCRIPTION
SV	XTAP526340	Relief valve blanking plug
Type X pilot operated pressure relief valve		
(XGA-200)	X006211350	Fixed setting 200 bar *(2900 psi)*
Type Y pilot operated pressure relief valve (standard)		
(YG2-125)	3XCAR110212	Range 100-160 bar *(1450-2300 psi)* standard setting 125 bar *(1800 psi)*
(YG3-175)	3XCAR110213	Range 125-250 bar *(1800-3600 psi)* standard setting 175 bar *(2500)*
(YG4-220)	3XCAR110214	Range 200-315 bar *(2900-4600 psi)* standard setting 220 bar *(3200 psi)*

3 Inlet valve options page 20

TYPE	CODE	DESCRIPTION
-	XTAP526340	Relief valve blanking plug (omitted in description)
F	3XCAR410200	Inlet anti-cavitation valve
L	XCAR410311	Hydraulic operated unloader valve
Solenoid operated unloader valve		
ELTW	0EFW0062000	Push and twist type with detent emergency
ELNW	0EFW0062001	Without emergency
ELPW	0EFW0062002	Push-button emergency

4 Parts *

TYPE	CODE	DESCRIPTION
-	3XTAP727180	G1/2 plug
-	3XTAP732200	G3/4 plug for S inlet cover
MAN1/8-MAN1/2	5MAN625220	G1/8 pressure gauge arrangement
MAN1/4-MAN1/2	5MAN627240	G1/4 pressure gauge arrangement

5 Flow control valve page 21

TYPE	CODE	DESCRIPTION
N	1636040203	Flow control valve with handwheel **for S type inlet cover**

6 Commutator * page 14

TYPE	CODE	DESCRIPTION
R2	5COM406202	Rotary commutator **for arranged inlet cover**

7 Section threading

Specify only if it is different from BSP standard (see page 4)

8 Coils page 61

TYPE	CODE	DESCRIPTION
12VDC	4SLE001200A	**BER** type 12 VDC, ISO4400 connector

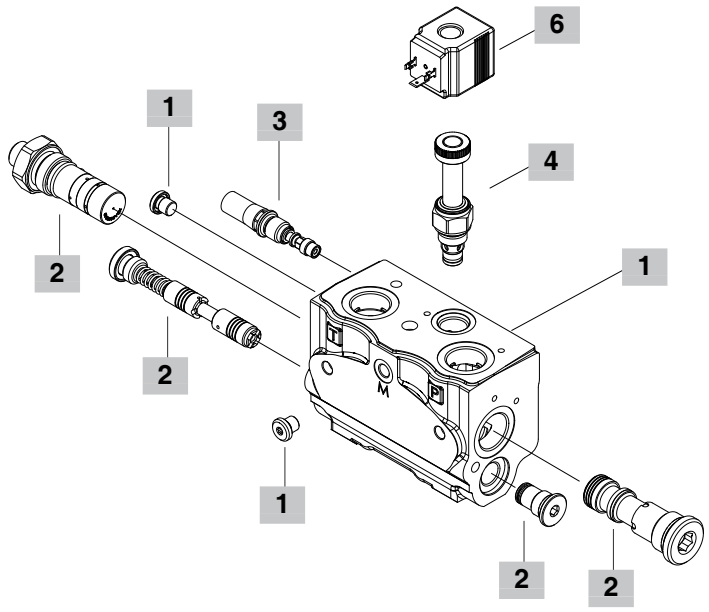
For complete available coil list please see page 61

NOTE (*) – Codes are referred to **BSP** thread.

Part ordering codes with VP inlet section

FE SD8 / AD / VP (LSZ - 230) ELN - ..... - 12VDC

1 2 3 4 5 6



1 Inlet cover body * page 16

TYPE	CODE	DESCRIPTION
AD/VP	5FIA108319-H	Arranged for priority valve

2 Compensator kit

TYPE	CODE	DESCRIPTION
VP	5CAS318067	Compensator kit

3 L.S. relief valve options page 18

Standard setting is referred to 10 l/min *(2.6 US gpm)*

TYPE	CODE	DESCRIPTION
LSD	XCAR126215	Range 40-180 bar *(580-2600 psi)* standard setting 90 bar *(1300 psi)*
	XCAR126213	Range 180-350 bar *(2600-5000 psi)* standard setting 180 bar *(2600 psi)*
LSH	XCAR126216	Range 40-180 bar *(580-2600 psi)* standard setting 90 bar *(1300 psi)*
	XCAR126217	Range 180-350 bar *(2600-5000 psi)* standard setting 180 bar *(2600 psi)*
LSZ	5CAR126221	Range 40-180 bar *(580-2600 psi)* standard setting 90 bar *(1300 psi)*
	5CAR126219	Range 130-350 bar *(1900-5000 psi)* standard setting 180 bar *(2600 psi)*
ST	5KIT126210	Relief valve blanking plug

4 Unloader valve options page 19

TYPE	CODE	DESCRIPTION
ELN	0EC08002031	Without emergency
ELV	0EC08002034	With screw emergency
ELP	0EC08002033	With push-button emergency
ELT	0EC08002035	With "twist & push" emergency
LT	XTAP510320	Valve blanking plug

5 Section threading

Specify only if it is different from BSP standard (see page 4)

6 Coils page 61

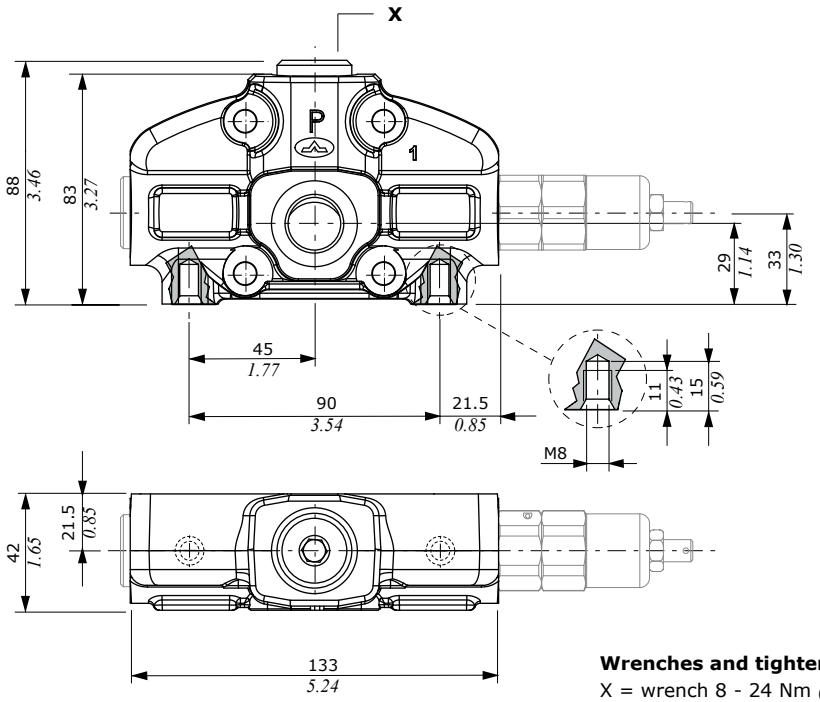
TYPE	CODE	DESCRIPTION
12VDC	4SLE001200A	**BER** type, 12 VDC, ISO4400 connector

For complete available coil list please see page 61

NOTE (*) – Codes are referred to **BSP** thread.

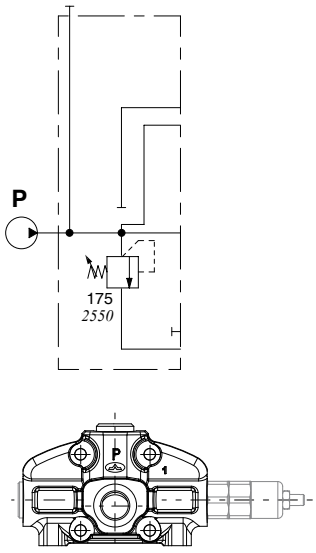
Dimensional data and hydraulic circuit

Standard inlet cover configuration



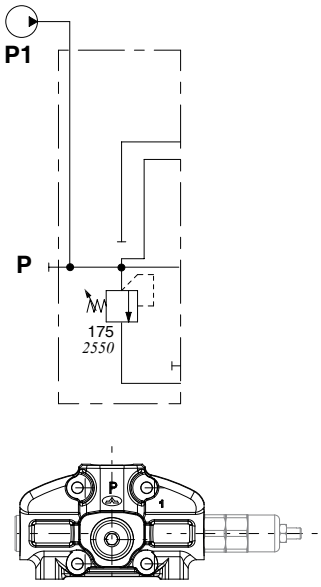
Wrenches and tightening torques
X = wrench 8 - 24 Nm *(17.7 lbft)*
NOTE - for wrenches and tightening torques about valves please see dedicated pages.

For left inlet directional valve, side port



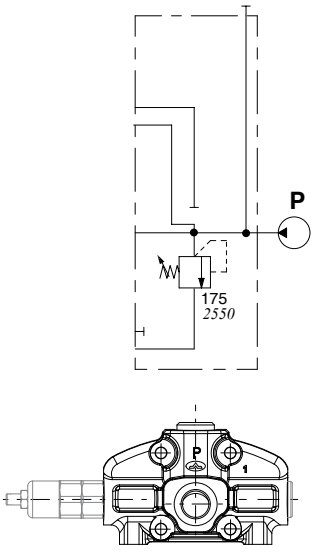
Description example:
AC(YG3–175)

For left inlet directional valve, upper port



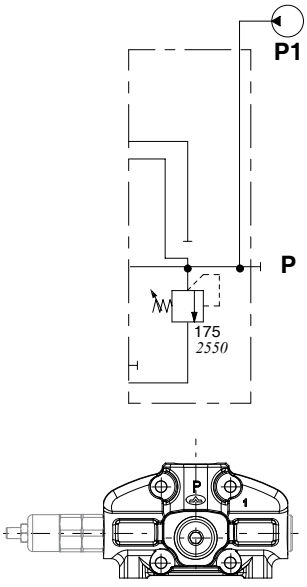
Description example:
AD(YG3–175)

For right inlet directional valve, side port



Description example:
BC(YG3–175)

For right inlet directional valve, upper port

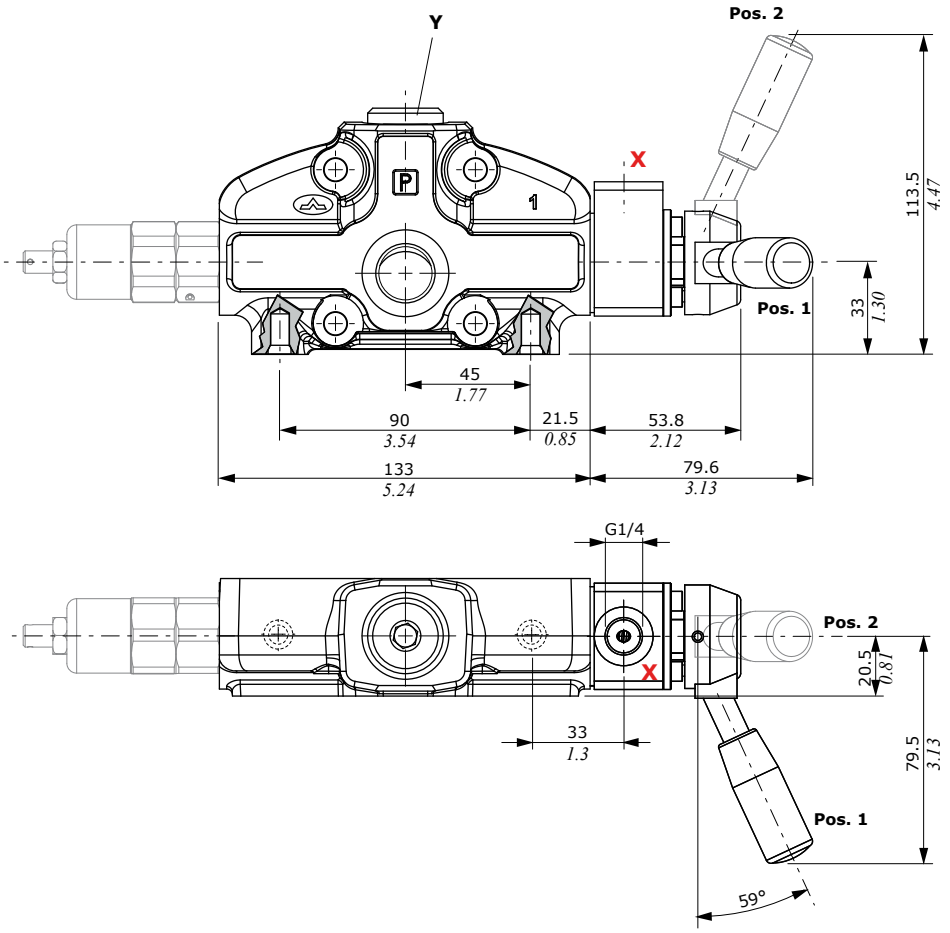


Description example:
BD(YG3–175)

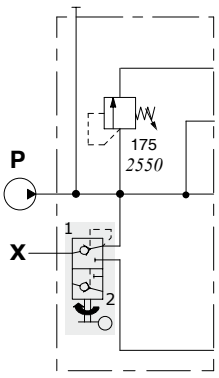
Dimensional data and hydraulic circuit

For rotary commutator

Drawing and circuit are referred to left inlet directional valve.



Wrenches and tightening torques
Y = wrench 8 - 24 Nm *(17.7 lbft)*
NOTE - for wrenches and tightening torques about valves please see dedicated pages.

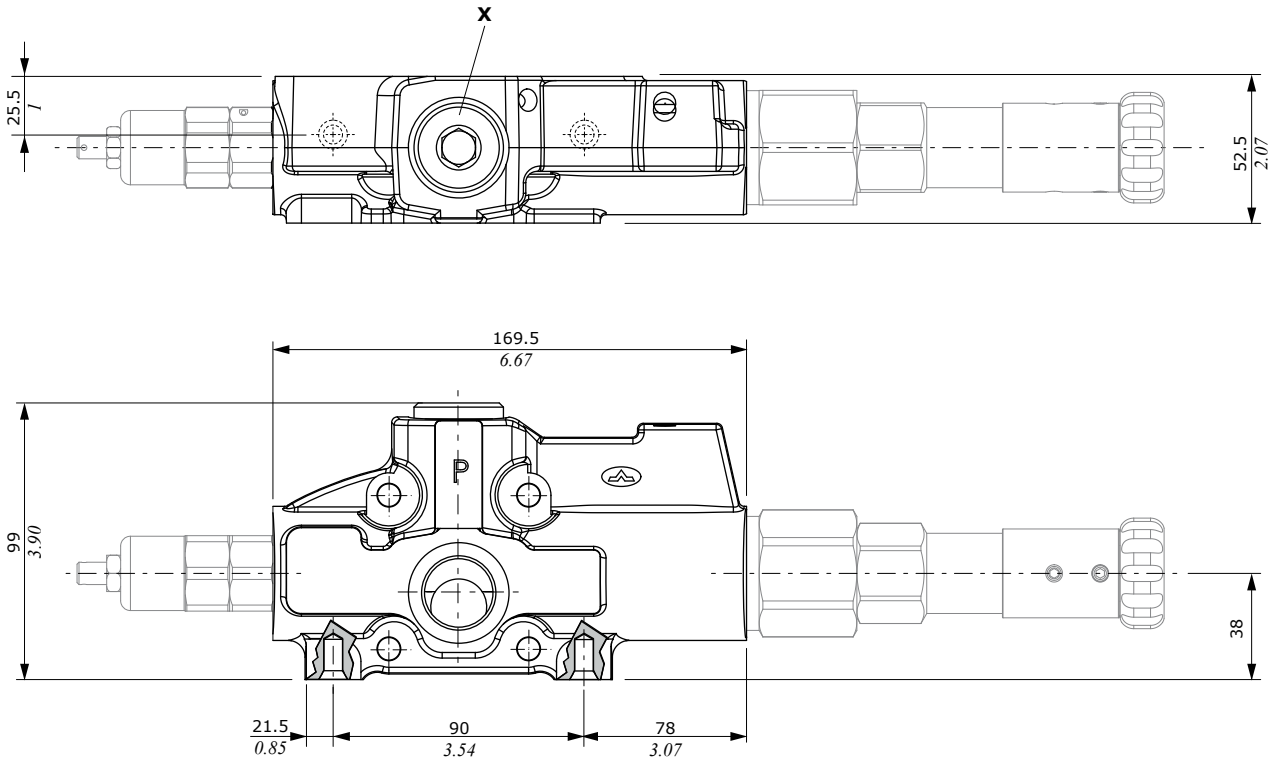


Commutator features
Max. pressure. . . . . : 210 bar *(3050 psi)*
Internal leakage . . . . . : 3 cm³/min @ 100 bar
(0.18 in³/mm @ 1450 psi)

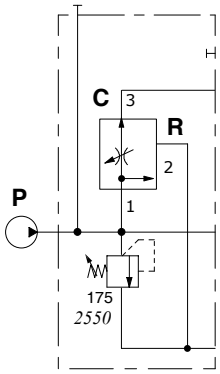
Dimensional data and hydraulic circuit

S type for flow regulator

Drawing and circuit are referred to left inlet directional valve.

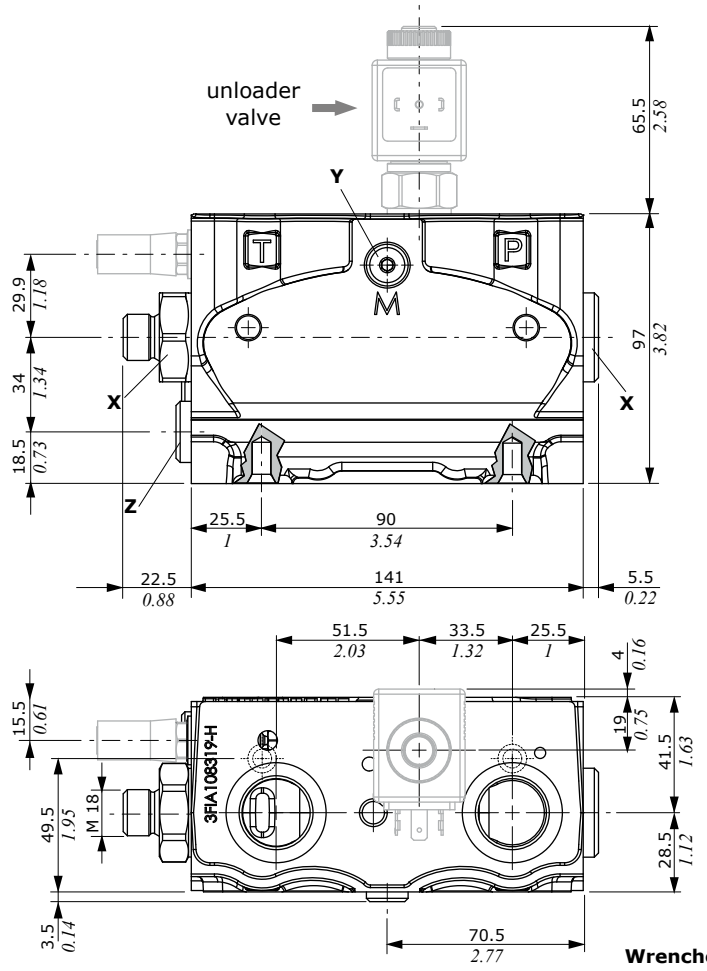


Wrenches and tightening torques
X = wrench 12 - 42 Nm *(31 lbft)*
NOTE - for wrenches and tightening torques about valves please see dedicated pages.

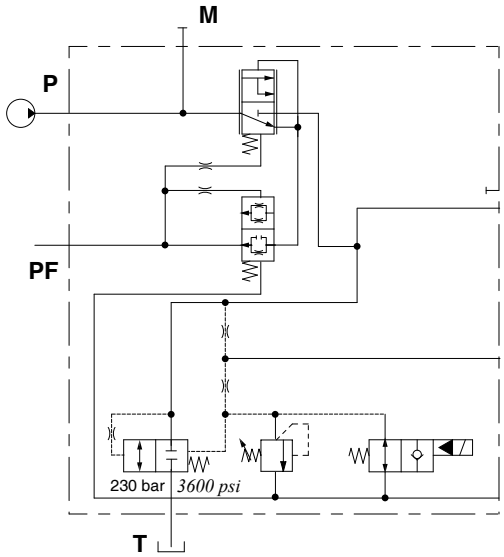


Configuration with priority valve

Dimensional data and hydraulic circuit



Wrenches and tightening torques
X = wrench 12 - 42 Nm *(31 lbft)*
Y = allen wrench 4 - 9.8 Nm *(7.23 lbft)*
Z = allen wrench 6 - 24 Nm *(17.7 lbft)*
NOTE - for wrenches and tightening torques about valves please see dedicated pages.

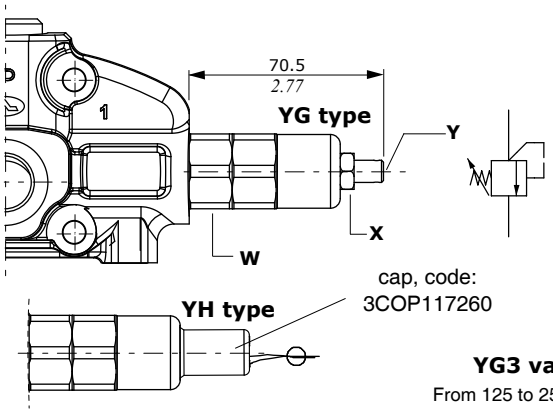


Features
Max. pressure. . . . . .: 315 bar *(4550 psi)*
Internal leakage . . . . . .: 3 cm³/min @ 100 bar
(0.18 in³/mm @ 1450 psi)
For **BER** type coil please see page 61

Inlet relief valve options

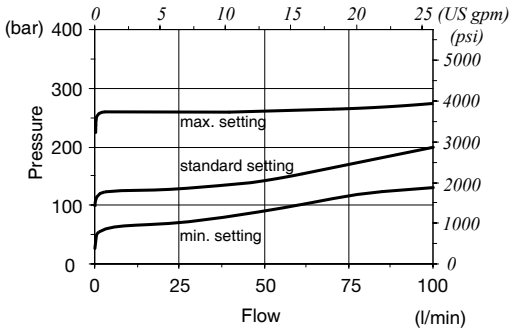
Y type direct overpressure relief valve

Configuration type:



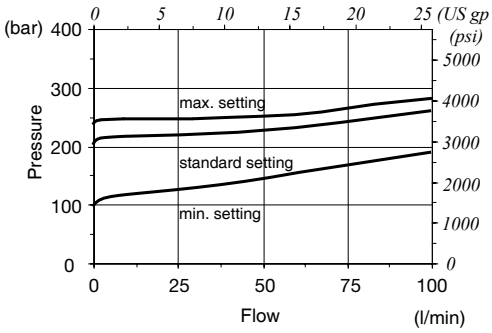
YG2 valve setting range

From 100 to 160 bar *(from 1450 to 2300 psi)*



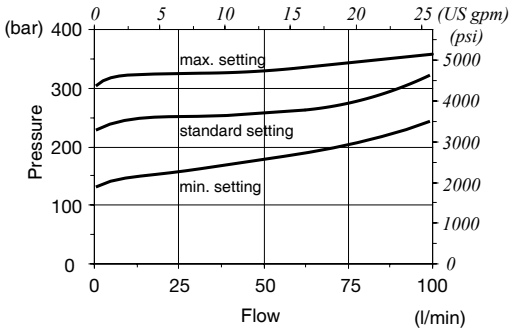
YG3 valve setting range

From 125 to 250 bar *(from 1800 to 3600 psi)*



YG4 valve setting range

From 200 to 315 bar *(from 2900 to 4600 psi)*

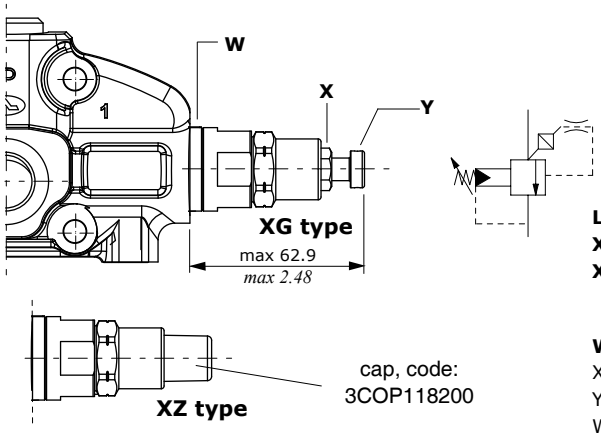


Legenda
YG: adjustable with screw
YH: valve set and locked

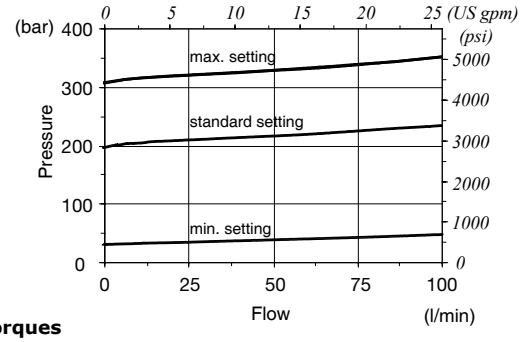
Wrenches and tightening torques
X = wrench 13 - 24 Nm *(17.7 lbft)*
Y = allen wrench 4
W = wrench 27 - 42 Nm *(31 lbft)*

X type pilot operated pressure relief valve

Configuration type:



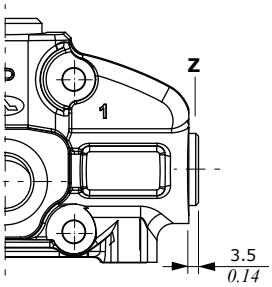
XGA valve setting range



Legenda
XG: adjustable with screw
XZ: valve set and locked with tamper proof cap

Wrenches and tightening torques
X = wrench 13 - 24 Nm *(17.7 lbft)*
Y = allen wrench 6
W = wrench 27 - 42 Nm *(31 lbft)*

SV relief valve blanking plug





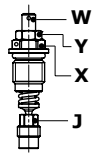
Wrenches and tightening torques
Z = allen wrench 10 - 24 Nm *(17.7 lbft)*

Inlet relief valve options

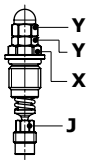
L.S. relief valves

For VP inlet section.

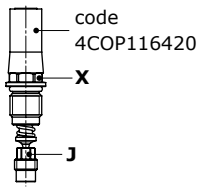
LSH type



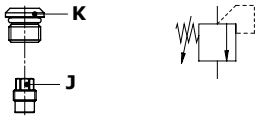
LSD type



LSZ type

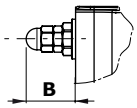


ST type



Wrenches and tightening torques

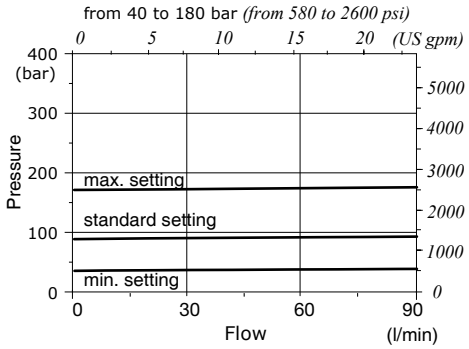
X = wrench 13 - 42 Nm *(31 lbft)*
Y = wrench 10 - 9.8 Nm *(7.2 lbft)*
W = wrench 3
J = wrench 7 - 24 Nm *(17.7 lbft)*
K = wrench 5 - 24 Nm *(17.7 lbft)*



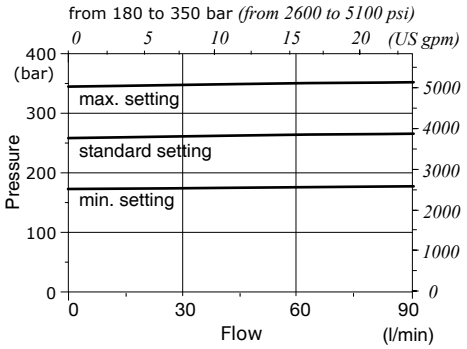
Type	Dim. B mm - *in*
LSD	21.5 - *0.85*
LSH	17 - *0.67*
LSZ	34 - *1.34*

Legenda
LSH: with screw adjustment
LSD: with blind nut
LSZ: with tamper proof cap
ST: valve blanking plug

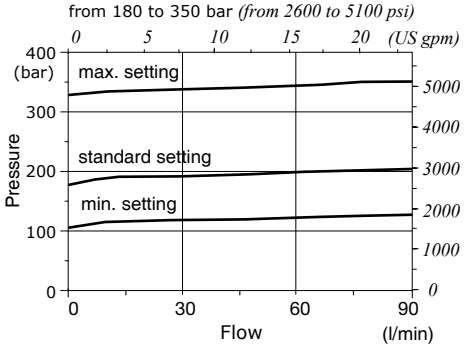
LSH, LSD and LSZ valves setting range



LSH and LSD valves setting range



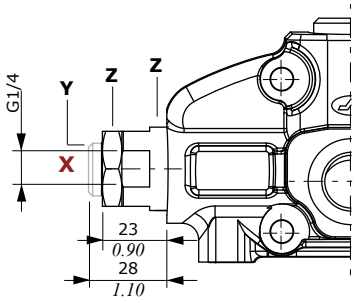
LSZ valve setting range

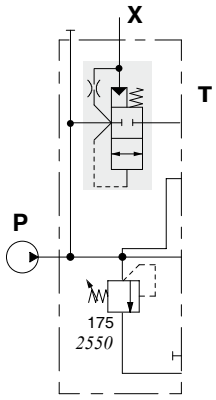


Inlet valve options

Unloader valve

Hydraulic operated

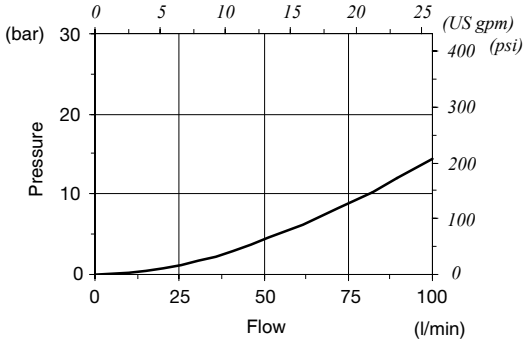




Wrenches and tightening torques
Z = wrench 27 - 42 Nm *(31 lbft)*
Y = allen wrench 6 - 24 Nm *(17.7 lbft)*

NOTE – For safety reasons the valve is supplied with blanking plug

Pressure drop valve

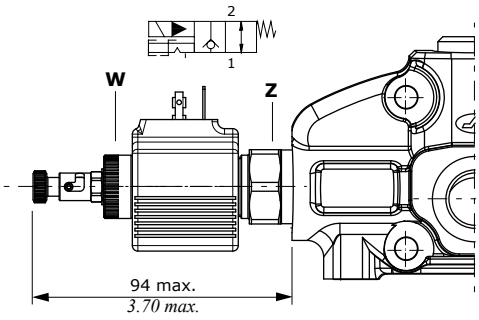


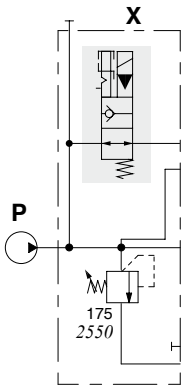
Features
Nominal flow . . . . . : 90 l/min *(24 US gpm)*
Internal leakage.. . . . . : 18 cm³/min @ 100 bar
(1.1 in³/mm @ 1450 psi)

Solenoid operated

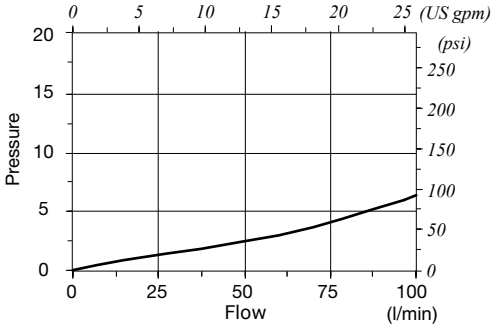
Emergency with push button and spring return; for detent position press and turn the button.
WARNING: the manual override option is intended for emergency use, not for continuous duty operation.

ELTW: "push & twist" type





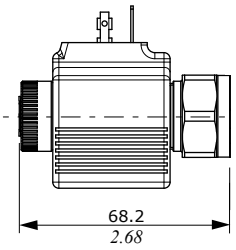
Pressure drop valve



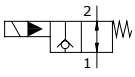
Wrenches and tightening torques
Z = wrench 27 - 42 Nm *(31 lbft)*
W = 6.6 Nm *(4.9 lbft)*

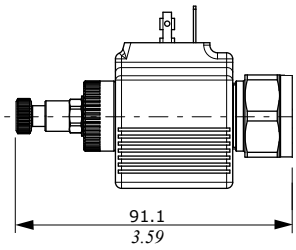
Features
Nominal flow . . . . . : 100 l/min *(26.4 US gpm)*
Max. pressure. . . . . : 315 bar *(4600 psi)*
Internal leakage.. . . . . : 1 cm³/min @ 100 bar
(0.061 in³/mm @ 1450 psi)

For **BER** type coil features and options please see page 61.

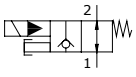


ELNW: without emergency





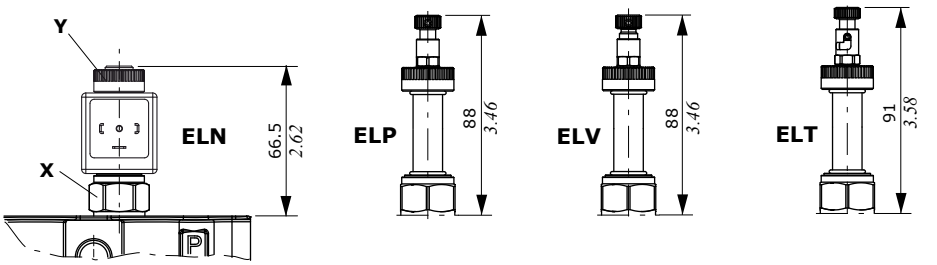
ELPW: push button type



Inlet valve options

Unloader valve

For VP inlet section

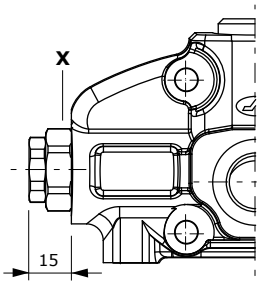


Legenda
ELN: without emergency
ELP: push-button emergency
ELV: screw emergency
ELT: "push & twist" emergency

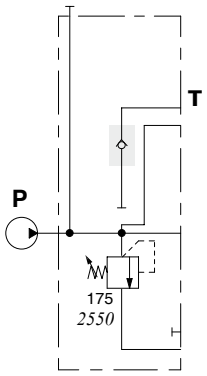
Wrenches and tightening torques
X = wrench 24 - 30 Nm *(22 lbft)*
Y = manual tightening

Features
Nominal flow . . . . : 40 l/min *(10.6 US gpm)*
Max. pressure. . . . : 350 bar *(5100 psi)*
Internal leakage . . : 0.10 cm³/min @ 210 bar
(0.006 in³/mm @ 1450 psi)
For **BER** type coil please see page 61.

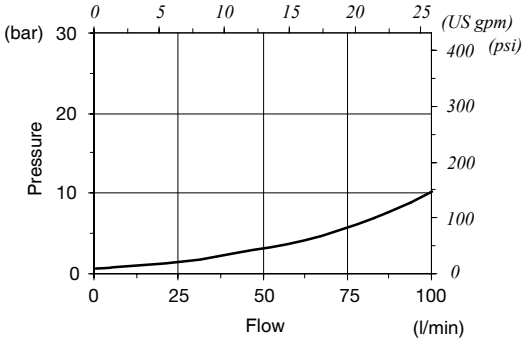
F anti-cavitation valve



Wrenches and tightening torques
X = wrench 27 - 42 Nm *(31 lbft)*



Pressure drop from T to P

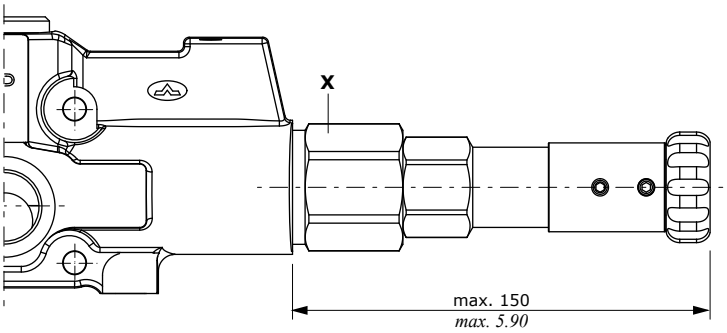


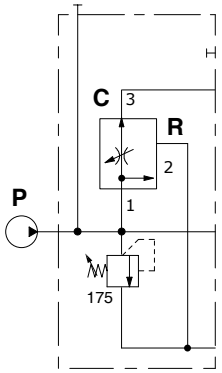
Features
Nominal flow . . . . . : 90 l/min *(23.77 US gpm)*
Internal leakage . . . . . : 2 cm³/min @ 100 bar
(0.122 in³/mm @ 1450 psi)

Inlet valve options

Flow control valve

For S inlet section.



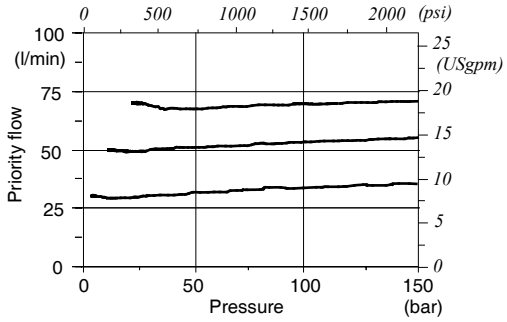


Wrenches and tightening torques
X = wrench 41 - 100 Nm *(73.7 lbft)*

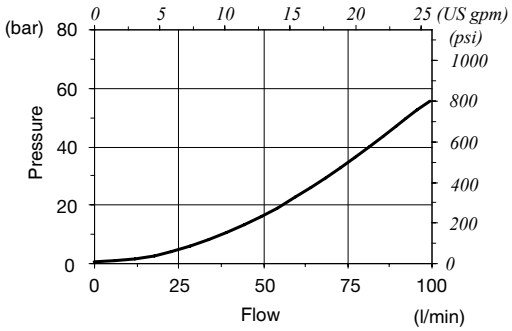
Features
Max. pressure. . . . . : 350 bar *(5100 psi)*
Nominal flow
On port 1 . . . . . : 110 l/min *(29 US gpm)*
On port 3 . . . . . : 150 l/min *(39.6 US gpm)*

Pressure-flow diagram

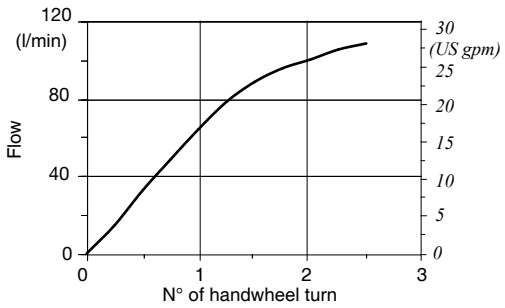
Q_{in} = 110 l/min *(29 US gpm)*



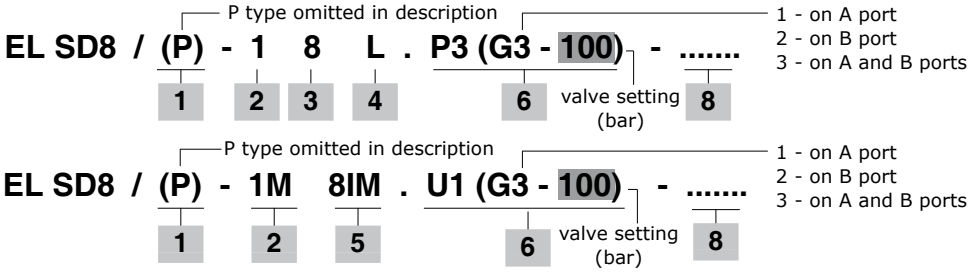
Pressure drop

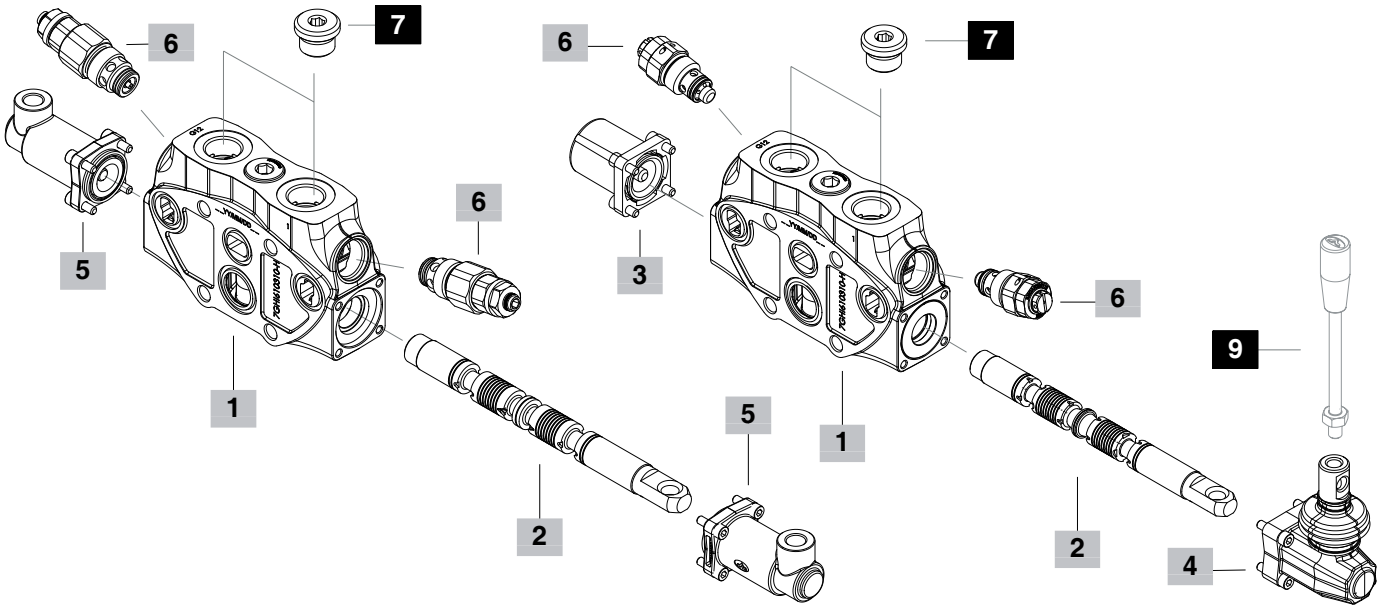


Flow regulation diagram



Part ordering codes





1 Working section kit * page 24

TYPE	CODE	DESCRIPTION
For mechanical control		
P	5EL1083000	For parallel circuit (omitted in description)
SP	5EL3083010	For series-parallel (tandem) circuit
Q	5EL1083010	For parallel circuit without arrangement for port valves
SPQ	5EL3083020	For series-parallel (tandem) circuit without arrangement for port valves
P5	5EL108320A	As P type: **for 5B spool with floating circuit** (P omitted in description)
P5(14A)	5EL1083201	As P type: **for 5(14A) spool with floating circuit** (P omitted in description)
For proportional hydraulic circuit		
P/IM	5EL108300A	For parallel circuit (omitted in description)
SP/IM	5EL308300A	For series-parallel (tandem) circuit
Q/IM	5EL1083010A	For parallel circuit without arrangement for port valves

2 Spools page 25

TYPE	CODE	DESCRIPTION
1	3CU2310100	Double acting, 3 positions, with A and B closed in neutral position
1CEX	3CU2310230	As type 1, with fine metering
1CSG	3CU2310250	As type 1, with metering suggested for flow up to 70 l/min *(18.5 US gpm)*
1M	3CU2310130	As type 1 with metering suggested for flow rates above to 70 l/min *(18.5 US gpm)*
1S	3CU2311102	As type 1, for series circuit
1A	3CU2321100	Double acting, 3 positions, with A open to tank in neutral position

2 Spools (continue) page 25

TYPE	CODE	DESCRIPTION
1B	3CU2322100	Double acting, 3 positions, with B open to tank in neutral position
2	3CU2325100	Double acting, with A and B open to tank in neutral position
2CEX	3CU2325230	As type 2, with fine metering
2CSG	3CU2325255	As type 2, with metering suggested for flow up to 70 l/min *(18.5 US gpm)*
2H	3CU2325225	Double acting, with A and B partially open to tank in neutral position
2S	3CU2327100	As type 2, for series circuit
3	3CU2331110	Single acting on A, 3 positions, B plugged, **G1/2 plug is required**
4	3CU2335100	Single acting on B, 3 positions, A plugged, **G1/2 plug is required**
4M	3CU2335110	As type 4 with metering suggested for flow rates above to 70 l/min *(18.5 US gpm)*, **G1/2 plug is required**
Spools for dedicated controls		
5B	3CU2343100	Double acting, 4 positions, float in position 3 with spool out, **13C type positioner kit is required**
5(14A)	3CU2345101	Double acting, 4 positions, float in position 3 with spool in, **14A type positioner kit is required**
8F	3CU2361100	Double acting, 3 positions, regenerative in position 1, **8CR type positioner kit is required**

NOTE (*) – Codes are referred to **BSP** thread.

Part ordering codes

3 "A" side spool positioners page 27

TYPE	CODE	DESCRIPTION
7FT	5V07208100	With friction and neutral position notch
8	5V08108010	With spring return in neutral position
8NA	5V08108001	As type 8, with steel cap
8WP	5V08108011	As type 8, with water proof type
8MA	5V08108240	As type 8, type A lighter spring
8MC	5V08208000	As type 8, type C heavier spring
8MD	5V08408000	As type 8, type D heavier spring
8D	5V08108202	As type 8, M8 female threaded pin extension for dual control
8D1	5V08108210	As type 8, pin with Ø 8 mm *(0.31 in)* radial hole
8D2	5V08108220	As type 8, M8 male threaded pin extension for dual control
8TL	5V08108310	As type 8 with pin control with flexible cable
8TLWP	5V08108320	As type 8, water proof type
8ED3	5V08108360	ON-OFF 12VDC electro-hydraulic kit
	5V08108361	ON-OFF 24VDC electro-hydraulic kit
8EPG3	5V08108737	ON-OFF 12VDC electro-pneumatic kit
	5V08108742	ON-OFF 24VDC electro-pneumatic kit
8IJ1	5V08108871(*)	With external hydraulic pilot to return from position 1 to neutral
8IJ2	5V08108861(*)	With external hydraulic pilot to return from position 2 to neutral
8IJ3	5V08108851(*)	With external hydraulic pilot to return from positions 1 and 2 to neutral
8IZ	5V08108800(*)	Proportional hydraulic control
8PG	5V08108708	ON-OFF pneumatic kit
8MG3	5V08108150	As type 8 with microswitch in position 1 and 2 (for other configuration please see page 29)
8MG39	5V08108101	As type 8 with double microswitch in position 1 and 2 (for other configuration please see page 30)
8SPSL-4.5(A)-0.5(B)		
	5V08108101	As type 8 with analog sensor for spool position
8SPSD		
	5V08108---	As type 8 with digital sensor for spool position
9B	5V09108040	With detent in position 1 and spring return in neutral position
9BWP	5V09108041	As 9B type, waterproof type
10B	5V10108040	With detent in position 2 and spring return in neutral position
11	5V11108000	With detent in position 1, neutral and 2
11B	5V11108040	With detent in position 1, 2 and spring return in neutral position
11WP	5V11108001	Waterproof type
15	5V15108000	2 positions, detent in pos. 1 and neutral
16	5V16108010	2 positions, detent in pos. 2 and neutral
19	5V19108000	2 positions, with spring return in neutral position from position 1
20	5V19108000	2 positions, with spring return in neutral position from position 2
Controls for dedicated spools		
8CR	5V08108022	3 positions with spring return in neutral and reduced spool stroke: **for 8F spool**
13C	5V13208020	4 positions with spring return in neutral position and detent in pos.3: **for 5B spool**
14A	5V14108000	Detent in positions 1, 2 and 3, kick-out in position 0: **for 5(14A) spool**

4 "B" side options page 38

TYPE	CODE	DESCRIPTION
L	5LEV108000	Standard lever box
LSG	5LEV108000S	Lever box, waterproof type
LF3	5LEV108710	Lever box with spool stroke limiter
LB	5LEV308000	Steel lever kit
SLP	5COP108000	Without lever box, with dust-proof plate
SLCY	5COP208060	Without lever box, with endcap
LCB	5CLO208000	Joystick lever for 2 section operation
LCE	5CLO208050	As previous one with bronze support
TQ	5TEL108110	Flexible cable connection

5 Complete controls * page 41

TYPE	CODE	DESCRIPTION
8IM	5IDR208300	Proportional hydraulic control
8IMF3	5IDR208220	Proportional hydraulic control with stroke limiter

6 Port valves page 42

Standard setting is referred to 10 l/min *(2.6 US gpm)*

TYPE	CODE	DESCRIPTION
-	3XTAP524290	Valve blanking plug (omitted in description)
C	XCAR408110	Anti-cavitation valve
DST	3XTAP624180	Valve blanking plug with connection to tank
Anti-shock valve		
P(G2)	3XCAR208112	Range 55-140 bar *(790-2050 psi)* standard setting 60 bar *(870 psi)*
P(G3)	3XCAR208113	Range 63-220 bar *(900-3200 psi)* standard setting 100 bar *(1450 psi)*
P(G4)	3XCAR208114	Range 180-350 bar *(2600-5100 psi)* standard setting 200 bar *(2900 psi)*
Anti-shock and anti-cavitation valve		
U(G2)	XCAR308112	Range 63-125 bar *(900-1800 psi)* standard setting 63 bar *(900 psi)*
U(G3)	XCAR308115	Range 100-250 bar *(1450-3600 psi)* standard setting 100 bar *(1450 psi)*
U(G4)	XCAR308114	Range 200-315 bar *(2900-4600 psi)* standard setting 200 bar *(2900 psi)*
Piot operated anti-shock and anti-cavitation valve		
UXW(G-200)	X005421200	Range 30-435 bar *(435-4600 psi)* standard setting 200 bar *(2900 psi)*

7 Port plugs*

CODE	DESCRIPTION
3XTAP727180	G1/2 plug for single acting spool

8 Section threading

Specify only if it is different from BSP standard (see page 4)

9 Optional handlevers

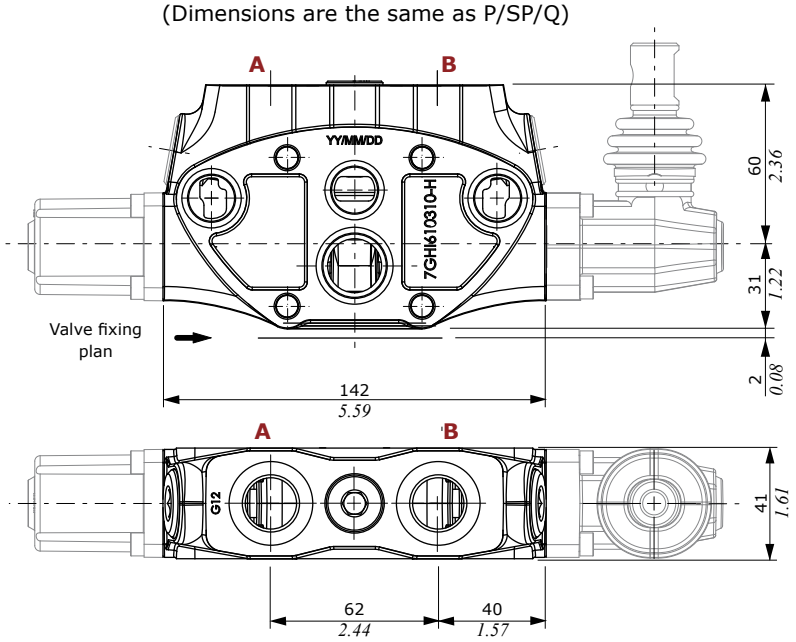
TYPE	CODE	DESCRIPTION
AL01/M10x200	170012020	For L, lever box, 200 mm *(7.87 in)*
AL08/M12x200	170013120	For LCB joystick, 200 mm *(7.87 in)*

For handlevers features please see dedicated catalogue cod. D1WWEH01E

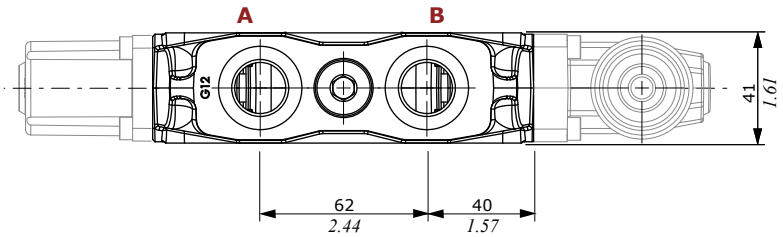
NOTE (*) – Codes are referred to **BSP** thread.

Dimensional data and hydraulic circuit

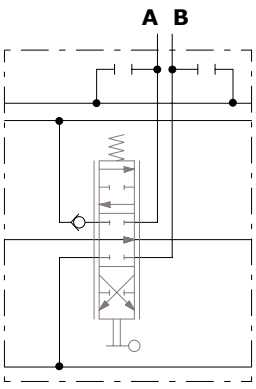
P type
With port valve arrangement
(Dimensions are the same as P/SP/Q)



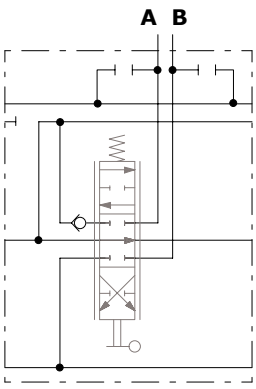
Q type
Without port valve arrangement



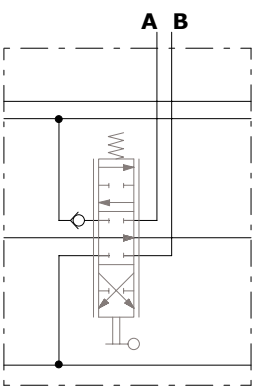
P type



SP type



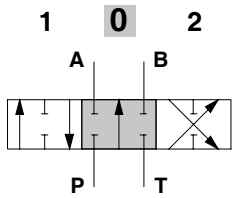
Q type



Spools

1 (1CEX/1CSG/1M) type spool

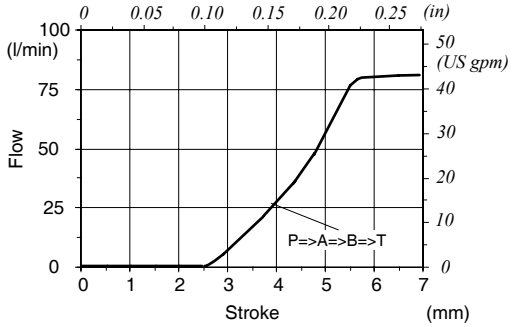
Double acting, 3 positions, with A and B closed in neutral position



Spool stroke
position 1: + 7 mm *(+ 0.28 in)*
position 2: - 7 mm *(- 0.28 in)*

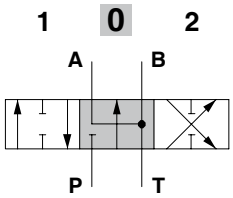
1 type spool metering

Q_{in} = 80 l/min *(42 US gpm)*
$P_{(on\ ports)}$ = 100 bar *(1450 psi)*



2 (2CEX/2CSG) type spool

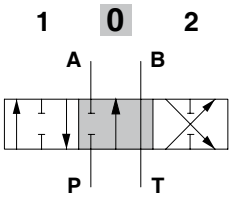
Double acting, 3 positions, with A and B open to tank in neutral position



Spool stroke
position 1: + 7 mm *(+ 0.28 in)*
position 2: - 7 mm *(- 0.28 in)*

1B type spool

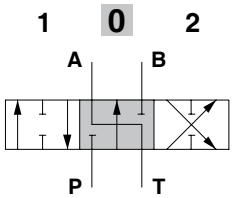
Double acting, 3 positions, with B open to tank in neutral position



Spool stroke
position 1: + 7 mm *(+ 0.28 in)*
position 2: - 7 mm *(- 0.28 in)*

1A type spool

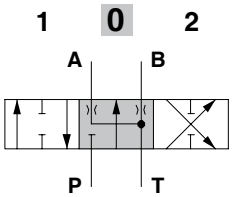
Double acting, 3 positions, with A open to tank in neutral position



Spool stroke
position 1: + 7 mm *(+ 0.28 in)*
position 2: - 7 mm *(- 0.28 in)*

2H type spool

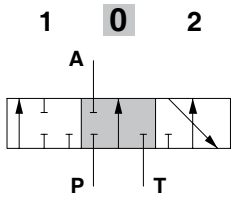
Double acting, 3 positions, with A and B partially open to tank in neutral position



Spool stroke
position 1: + 7 mm *(+ 0.28 in)*
position 2: - 7 mm *(- 0.28 in)*

3 type spool

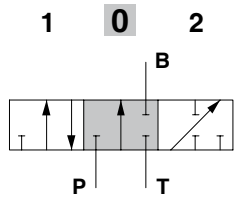
Single acting on A, 3 positions, B plugged, G1/2 plug is required



Spool stroke
position 1: + 7 mm *(+ 0.28 in)*
position 2: - 7 mm *(- 0.28 in)*

4 (4M) type spool

Single acting on B, 3 positions, A plugged, G1/2 plug is required

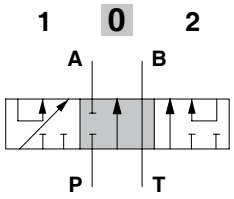


Spool stroke
position 1: + 7 mm *(+ 0.28 in)*
position 2: - 7 mm *(- 0.28 in)*

Spools

1S type spool

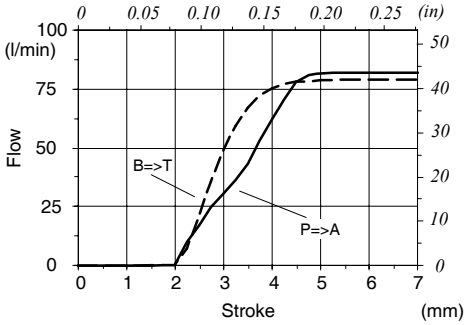
Double acting, 3 positions, with A and B closed in neutral position, for series circuit



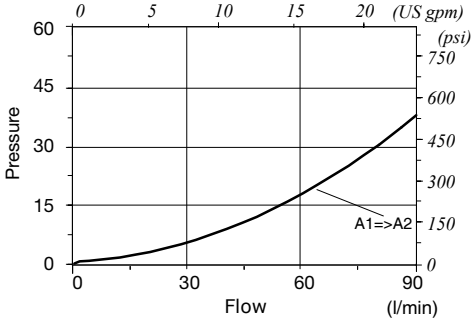
Spool stroke
position 1: + 7 mm *(+ 0.28 in)*
position 2: - 7 mm *(- 0.28 in)*

1S type spool metering

Q_{in} = 80 l/min *(42 US gpm)*
$P_{(on\ ports)}$ = 100 bar *(1450 psi)*

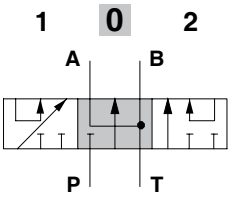


Pressure drop on series connection



2S type spool

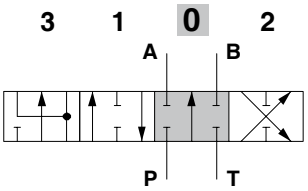
Double acting, 3 positions, with A and B connected to tank in neutral position, for series circuit



Spool stroke
position 1: + 7 mm *(+ 0.28 in)*
position 2: - 7 mm *(- 0.28 in)*

5B type spool

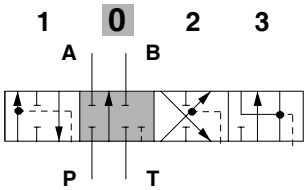
Double acting, with A and B closed in neutral position, 4 positions, floating in position 3, with spool out



Spool stroke
position 1: + 5.5 mm *(+ 0.22 in)*
position 2: - 5.5 mm *(- 0.22 in)*
position 3: + 10.5 mm *(+ 0.41 in)*

5(14A) type spool

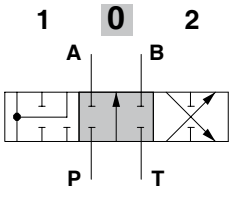
Double acting, with A and B closed in neutral position, 4 positions, floating in position 3, with spool in (lever pull with kick-out)



Spool stroke
position 1: + 5.5 mm *(+ 0.22 in)*
position 2: - 5.5 mm *(- 0.22 in)*
position 3: - 11 mm *(+ 0.43 in)*

8F type spool

Double acting, 3 positions, regenerative circuit in 2nd position (pos.1)

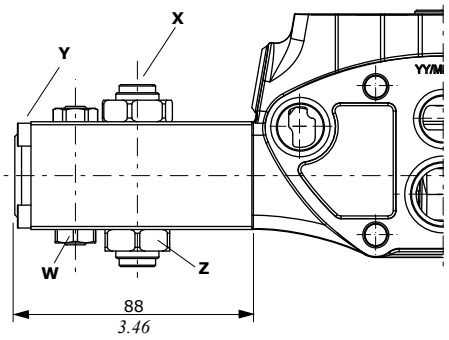


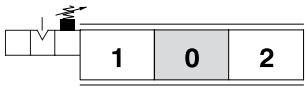
Spool stroke
position 1: + 5.7 mm *(+ 0.23 in)*
position 2: - 5.7 mm *(- 0.23 in)*

"A" side spool positioners

7FT type with friction

With neutral position notch.



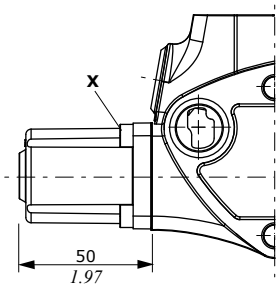


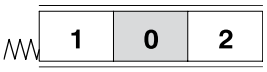
Wrenches and tightening torques
X = allen wrench 4
Y = allen wrench 4 - 6.6 Nm *(4.9 lbft)*
W = wrench 15 - 9.8 Nm *(7.2 lbft)*
Z = wrench 24 - Manual tightening

With spring return

8 - 8MA - 8MC - 8MD - 8WP type

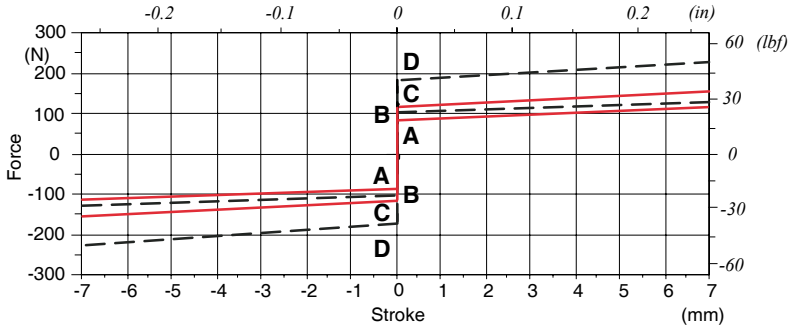
It is supplied with **B** type standard spring (see force-stroke diagram) and it is available with A type (**8MA**) lighter spring or with C-D type (**8MC-8MD**) heavier spring. **8WP** waterproof type is available.





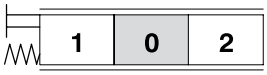
Wrenches and tightening torques
X = allen wrench 4
6.6 Nm *(4.9 lbft)*

Force-stroke diagram

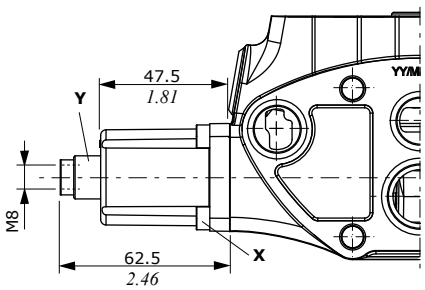


8D type

With M8 female threaded pin extension for dual control.

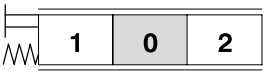


Wrenches and tightening torques
X = allen wrench 4 - 6.6 Nm *(4.9 lbft)*
Y = wrench 13 - 24 Nm *(17.7 lbft)*

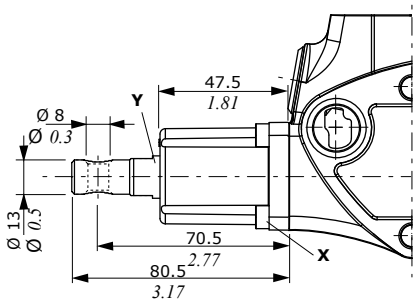


8D1 type

With Ø 8 hollow pin extension.

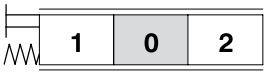


Wrenches and tightening torques
X = allen wrench 4 - 6.6 Nm *(4.9 lbft)*
Y = wrench 14 - 24 Nm *(17.7 lbft)*

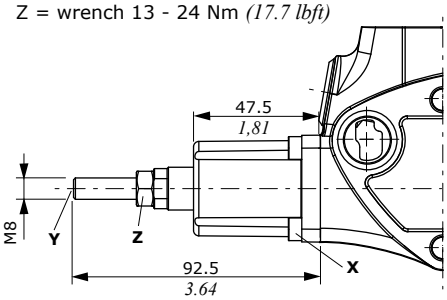


8D2 type

With M8 male threaded pin extension for dual control.



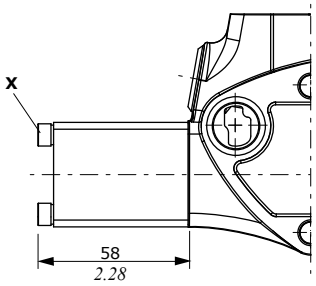
Wrenches and tightening torques
X = allen wrench 4 - 6.6 Nm *(4.9 lbft)*
Y = allen wrench 4 - 24 Nm *(17.7 lbft)*
Z = wrench 13 - 24 Nm *(17.7 lbft)*

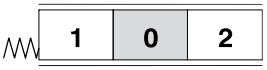


"A" side spool positioners

8NA type with spring return

With steel cap, **B** type standard spring (see force-stroke diagram on page 27)

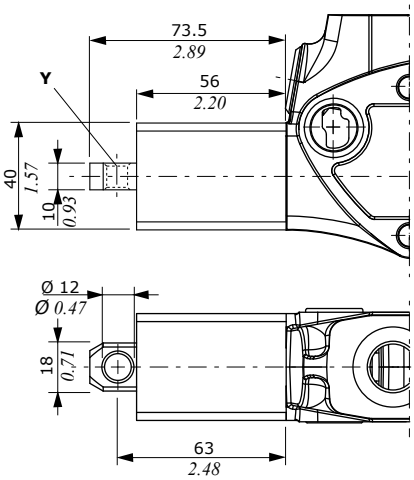


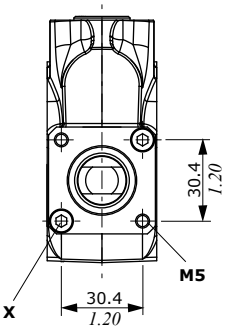


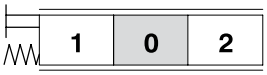
Wrenches and tightening torques
X = allen wrench 4 - 6.6 Nm *(4.9 lbft)*

8TL - 8TLWP type with spring return

As 8 type with pin control with flexible cable. **8TLWP** waterproof type is available.





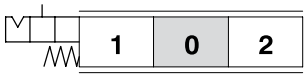


Wrenches and tightening torques
X = allen wrench 4 - 6.6 Nm *(4.9 lbft)*
Y = wrench 10 - 24 Nm *(17.7 lbft)*

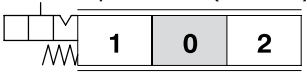
With detent and spring return to neutral position from either directions

9BWP waterproof type is available.

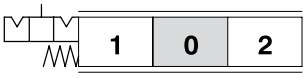
9B - 9BWP type
detent in position 1 (A curve)



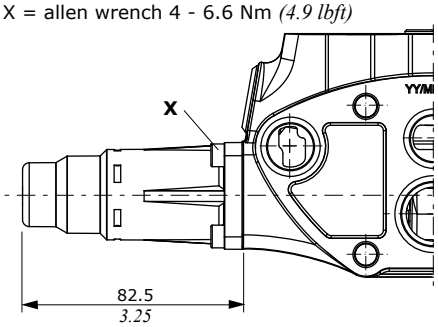
10B type
detent in position 2 (B curve)



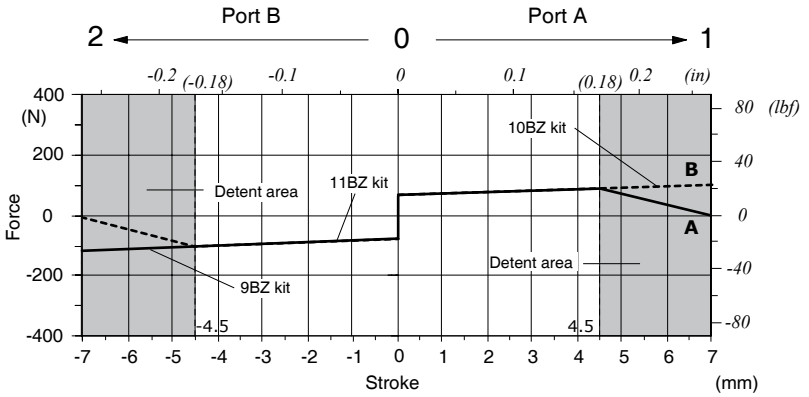
11B type
detent in position 1 and 2 (A and B curves)



Wrenches and tightening torques
X = allen wrench 4 - 6.6 Nm *(4.9 lbft)*



Force-stroke diagram
(for the controls shown)

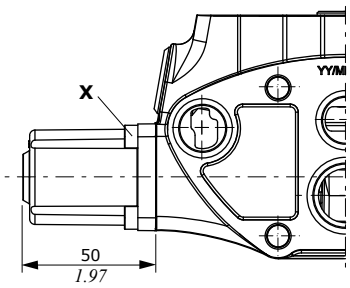


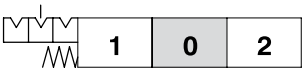
Position 1 - Detent force: 130 N ± 10% *(29.2 lbf)* / Release force: 215 N *(48.3 lbf)* ± 10%
Position 2 - Detent force: 145 N *(32.6 lbf)* ± 10% / Release force: 300 N *(67.4 lbf)* ± 10%

"A" side spool positioners

3 positions with detent 11 type

11WP waterproof type is available.

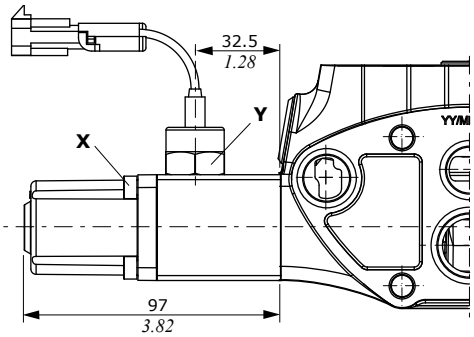




Wrenches and tightening torques
X = allen wrench 4 - 6.6 Nm *(4.9 lbft)*

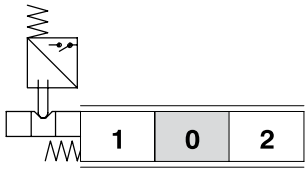
With microswitch for spool check position

With spring return in neutral position and microswitch operated in both directions.
Also **8MG1(NO)** configuration (microswitch operated in pos. 1) and **8MG2(NO)** configuration (microswitch operated in pos. 2) are also available; dimensions are the same as **8MG3**. **(NC)** configurations are available.

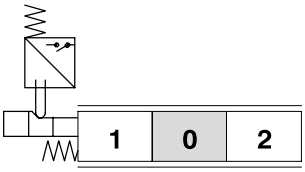


Wrenches and tightening torques
X = allen wrench 4 - 6.6 Nm *(4.9 lbft)*
Y = wrench 22 - 24 Nm *(17.7 lbft)*

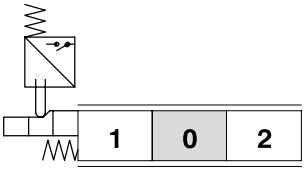
8MG3(NO) type
microswitch operated in pos. 1 and 2



8MG1(NO) type
microswitch operated in pos. 1



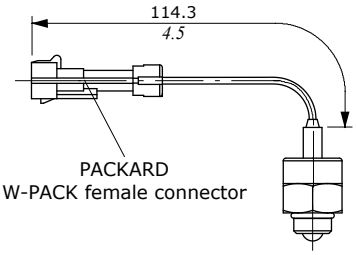
8MG2(NO) type
microswitch operated in pos. 2



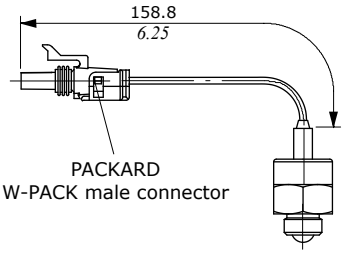
Control codes Microswitch operations				
Circuit	position 1 **8MG1**	position 2 **8MG2**	position 1-2 **8MG3**	Connector
(NO)	5V08108160	5V08108170	5V08108150	5CON001
(NC)	5V08108162	5V08108172	5V08108152	5CON005

Microswitch ordering codes

NO microswitch kit code: 4MIC734



NC microswitch kit code: 4MIC744

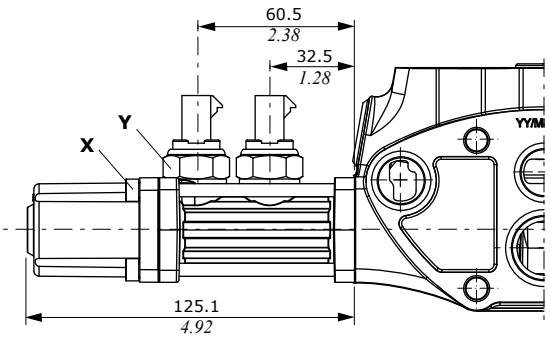


Microswitch features
Mechanical life ..... : 10^6 operations
Electrical life (resistive load) .. : 10^5 operations - 7A / 13.5 VDC
: $5x10^4$ operations - 10A / 12 VDC
: $5x10^4$ operations - 3A / 28 VDC
Connector ..... : Packard Weather-pack
mating connector not included

"A" side spool positioners

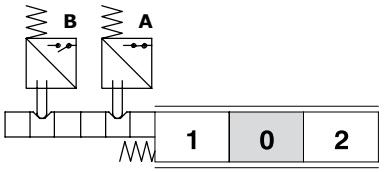
With double microswitch for spool check position

Execution with normally opened microswitch and normally closed microswitch **8MG39(NC/NO)** operated in pos. 1, 2 and spring return in neutral position. Available: **8MG29(NC/NC)** configuration with double normally closed microswitch operated in pos. 2; **8MG19(NC/NC)** configuration with double normally closed microswitch operated in pos. 1 and **8MG19/MG29(NC/NC)** with normally closed microswitch operated in pos. 1 and normally opened microswitch operated in in pos.2. Both executions have the same dimensions.

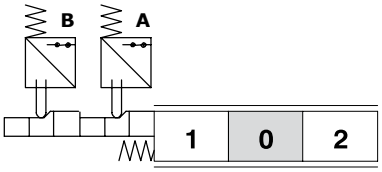


Wrenches and tightening torques
X = allen wrench 4 - 6.6 Nm *(4.9 lbft)*
Y = wrench 22 - 24 Nm *(17.7 lbft)*

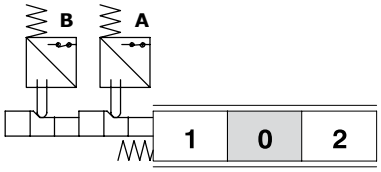
8MG39(NC/NO) type
double microswitch operated in pos. 1 and 2



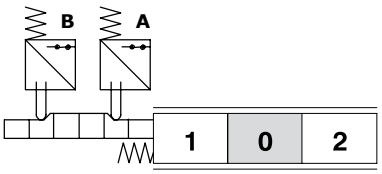
8MG29(NC/NC) type
double microswitch operated in pos. 2



8MG19(NC/NC) type
double microswitch operated in pos. 1



8MG19/MG29(NC/NC) type
double microswitch operated in pos. 1 and 2



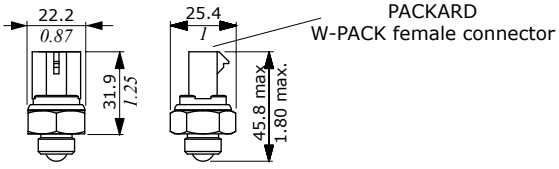
Control codes	Microswitch operations			
Circuit	position 1	position 2	position 1-2	position 1-2
	8MG19	**8MG29**	**8MG39**	**8MG19/8MG29**
(NC/NO)	-	-	5V08108101	-
(NC/NC)	5V08108108	5V08108104	-	5V08108112

Microswitch features
Mechanical life ..... : 10^6 operations
Electrical life (resistive load) .. : 10^5 operations - 7A / 13.5 VDC
: $5x10^4$ operations - 10A / 12 VDC
: $5x10^4$ operations - 3A / 28 VDC
Connector ..... : Packard Weather-pack
mating connector cod. 5CON140047 not included

	Positions	A	B
8MG39 (NC/NO)	**1**	•⁄•	•—•
	0	•—•	•⁄•
	2	•⁄•	•—•
8MG29 (NC/NC)	**1**	•—•	•—•
	0	•—•	•—•
	2	•⁄•	•⁄•
8MG19 (NC/NC)	**1**	•⁄•	•⁄•
	0	•—•	•—•
	2	•—•	•—•
8MG19/MG29 (NC/NC)	**1**	•⁄•	•—•
	0	•—•	•—•
	2	•—•	•⁄•

Microswitch ordering codes

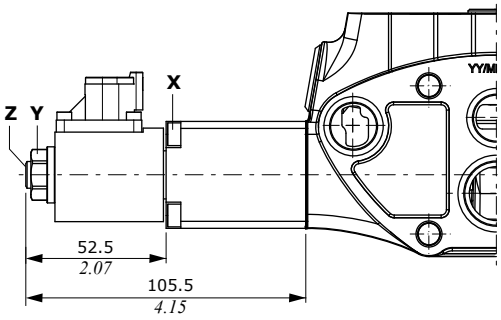
NO microswitch kit code: 4MIC733
NC microswitch kit code: 4MIC743



NOTE - NO and NC microswitches have the same dimensions

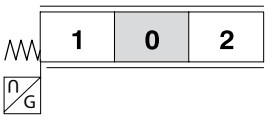
"A" side spool positioner

With spool position sensor

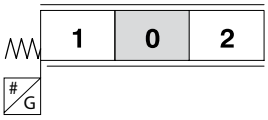


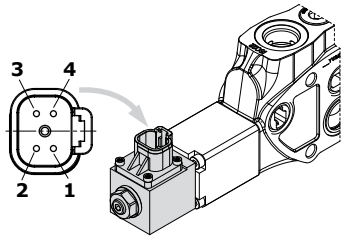
Wrenches and tightening torques
X = allen wrench 4 - 6.6 Nm *(4.9 lbft)*
Y = wrench 17 - 9.8 Nm *(7.2 lbft)*
Z = allen wrench 4 - 9.8 Nm *(7.2 lbft)*

8SPSL type
with analog spool position sensor



8SPSD type
with digital spool position sensor





Deutsch DT04-4P connector		
Pin	**Funzione SPSL**	**Funzione SPSD**
1	+ 5V	Out A
2	not connected	GND
3	GND	VB +
4	signal OUT	Out B

Deutsch DT06-4S mating connector, code 5CON140072

SPSL sensor

The SPSL position sensor converts the spool movements into a voltage linear signal.

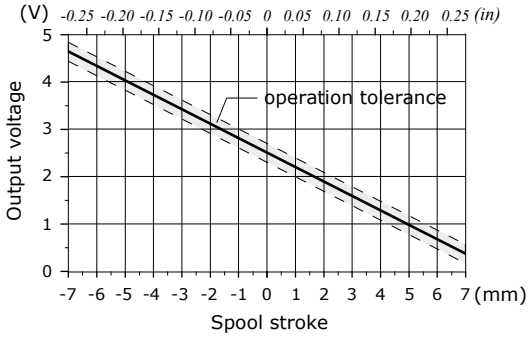
Working conditions		
Voltage supply		5 VDC
Current absorption		< 10 mA (no load)
Mechanical life		3x10⁶
Connector type		DT04-4P Deutsch
Weather protection		IP67 / IP69K
Working temperature		from -40°C to 105°C *(from -40°F to 221°F)*
Working pressure		350 bar *(5100 psi)*
Max. electrical stroke		±10 mm *(±0.39 in)*
Max. mechanical stroke		±10 mm *(±0.39 in)*
Output signal	range	from 0.5 to 4.5 V
	linearity	± 5%
	spool in neutral	2.5 ± 0.2 V
	max. current	1 mA
EMC compatibility		ISO 13766 / ISO 14982
Mechanical vibrations, shock, bumps		IEC 68-2-6,-27,-29

SPSD sensor

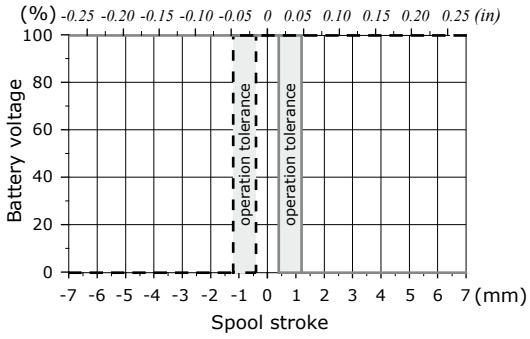
The SPSD position sensor converts the spool movements into an electric digital signal.

Working conditions		
Voltage supply		from 9 to 32 VDC
Current absorption		< 10 mA (no load)
Mechanical life		3x10⁶
Connector type		DT04-4P Deutsch
Weather protection		IP67 / IP69K
Working temperature		from -40°C to 105°C *(from -40°F to 221°F)*
Working pressure		350 bar *(5100 psi)*
Max. electrical stroke		±10 mm *(±0.39 in)*
Max. mechanical stroke		±10 mm *(±0.39 in)*
Output signal	type	PNP
	max. current	6 mA
EMC compatibility		ISO 13766 / ISO 14982
Mechanical vibrations, shock, bumps		IEC 68-2-6,-27,-29

SPSL sensor output signal

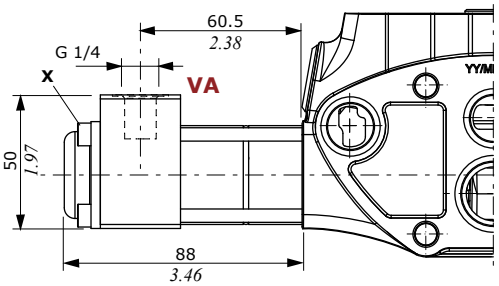


SPSD sensor output signal

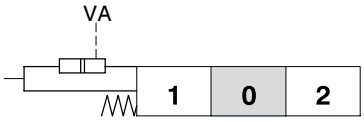


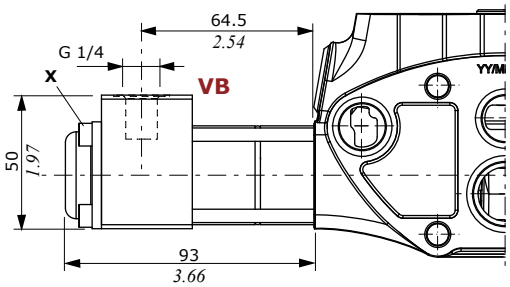
"A" side spool positioners

3 positions with external hydraulic pilot

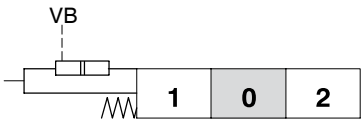


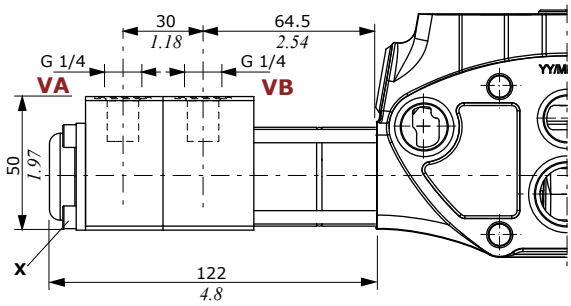
8IJ1 type
With external hydraulic pilot to return from position 1 to neutral



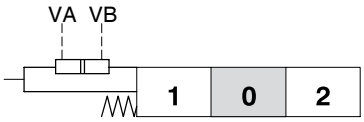


8IJ2 type
With external hydraulic pilot to retutn from position 2 to neutral.





8IJ3 type
With external hydraulic pilot to return from positions 1 and 2 to neutral

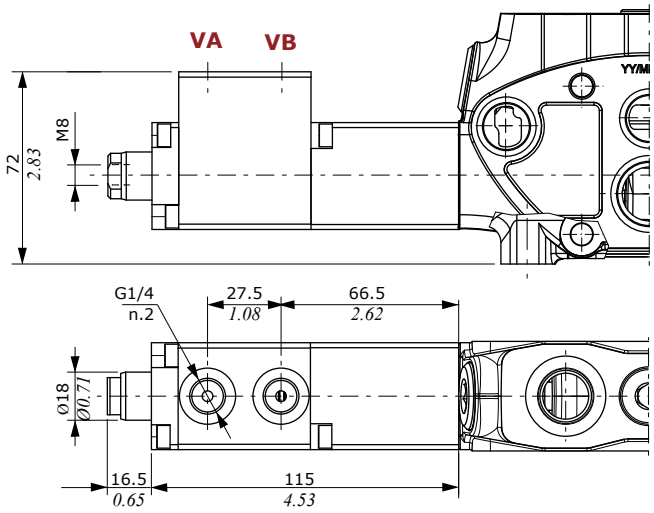


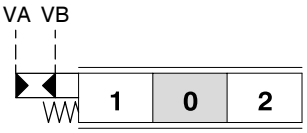
Wrenches and tightening torques
X = allen wrench 4 - 6.6 Nm *(4.9 lbft)*

Features
Pilot pressure..... : min. 50 bar (*725 psi*)
: max. 315 bar (*4600 psi*)

"A" side spool positioner

3 positions proportiona hydraulic control type 8IZ

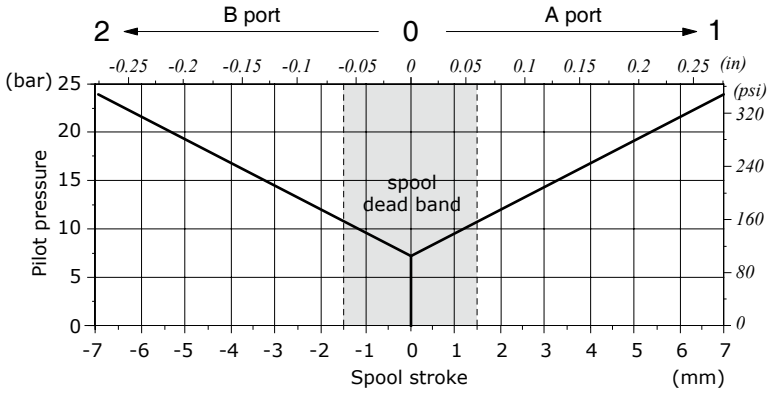




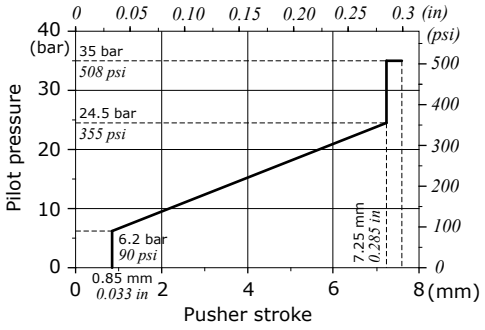
Features

Pilot pressure ..... : max. 100 bar *(1450 psi)*

Pressure - stroke diagram



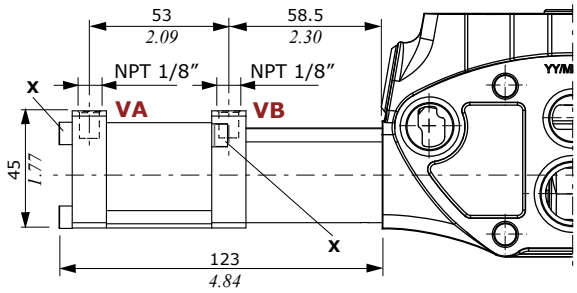
Control curve with step on VA and VB port: type 054

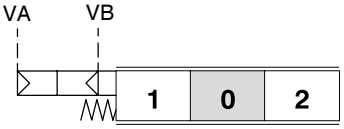


8PG type ON/OFF pneumatic kit

Wrenches and tightening torques

X = allen wrench 4 - 6.6 Nm *(4.9 lbft)*





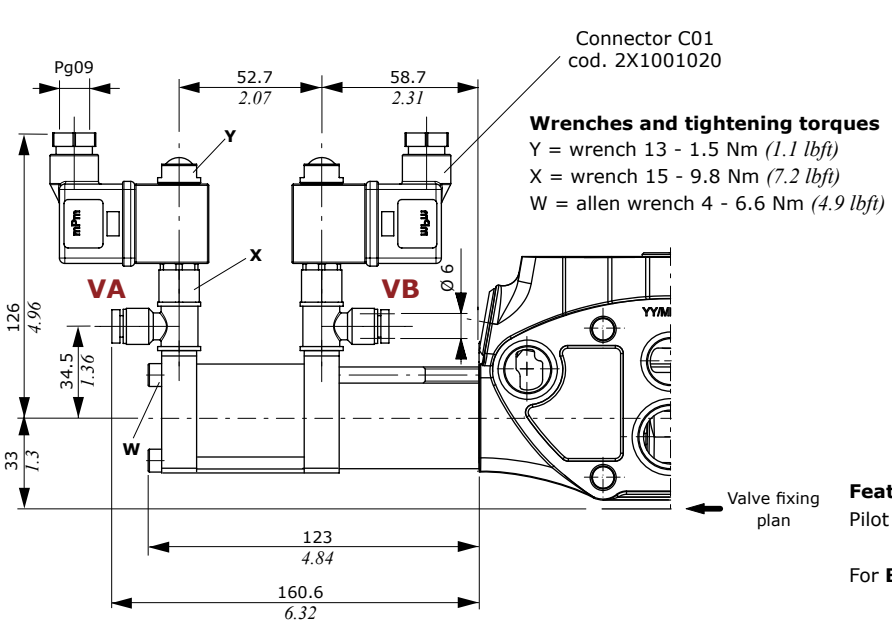
Features

Pilot pressure..... : min. 6 bar *(87 psi)*

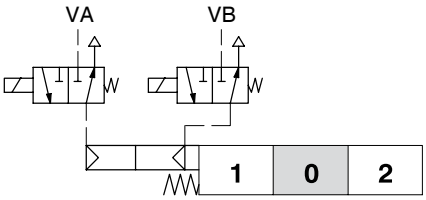
: max. 12 bar *(174 psi)*

"A" side spool positioners

8EPG3 type ON/OFF electro-pneumatic kit

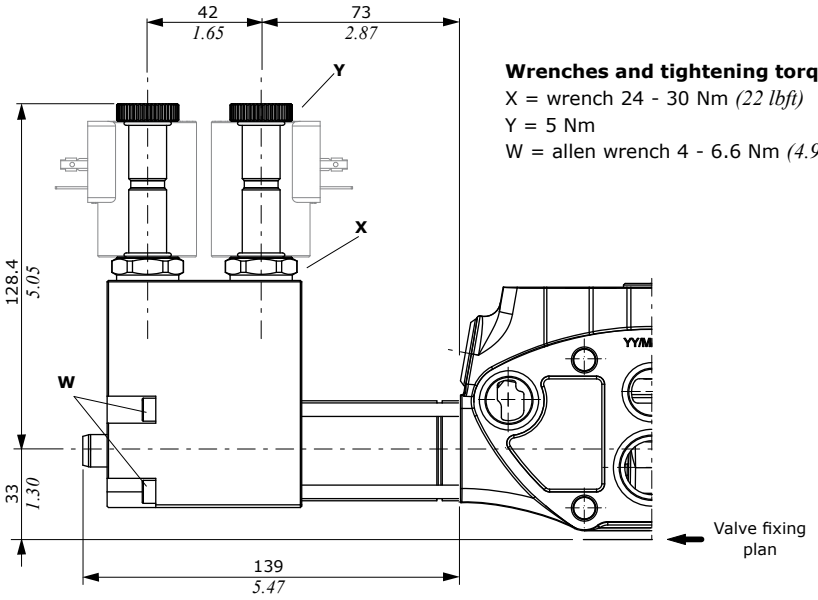


Wrenches and tightening torques
Y = wrench 13 - 1.5 Nm *(1.1 lbft)*
X = wrench 15 - 9.8 Nm *(7.2 lbft)*
W = allen wrench 4 - 6.6 Nm *(4.9 lbft)*

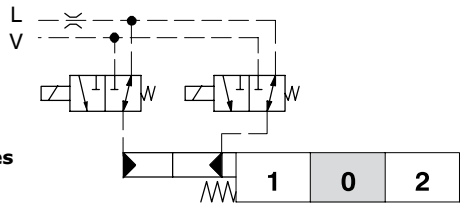


Features
Pilot pressure..... : min. 6 bar *(87 psi)*
: max. 12 bar *(174 psi)*
For **BPV** coil please see page 61

8ED3 type ON/OFF electro-hydraulic control



Wrenches and tightening torques
X = wrench 24 - 30 Nm *(22 lbft)*
Y = 5 Nm
W = allen wrench 4 - 6.6 Nm *(4.9 lbft)*

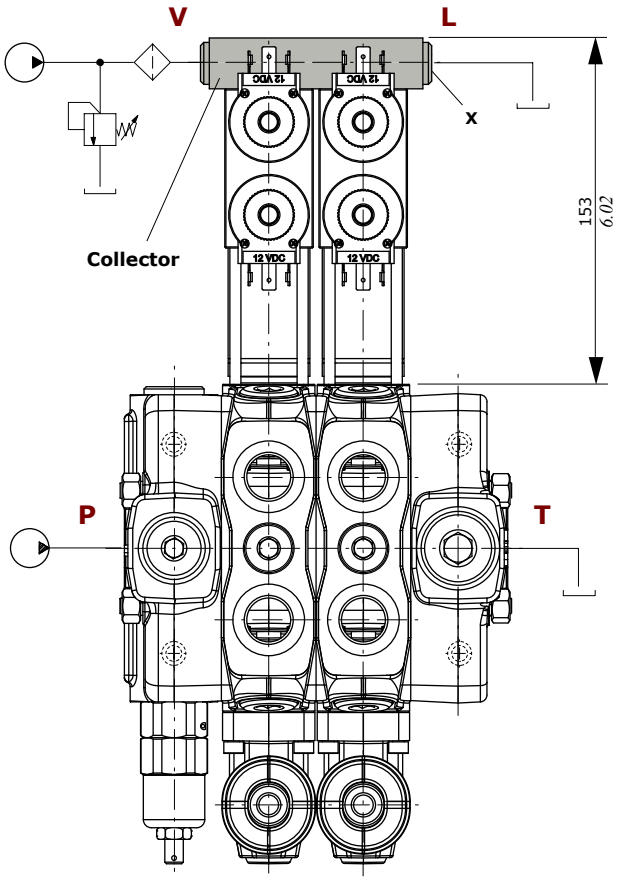


Features
Pilot pressure..... : min. 10 bar *(145 psi)*
: max. 50 bar *(725 psi)*
Max backpressure
on L drain..... : 25 bar *(360 psi)*
for **BT** type coil and mating connectors please see page 61.

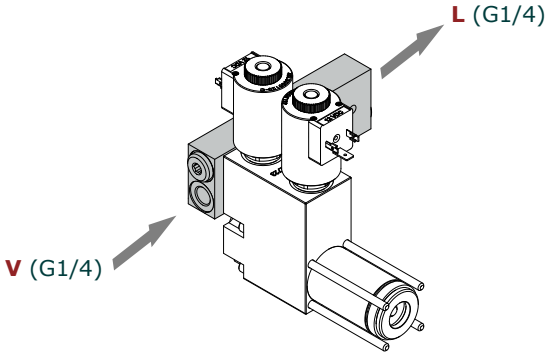
"A" side spool positioners

8ED3 type ON/OFF electro-hydraulic control

Collector kit for external pilot and drain

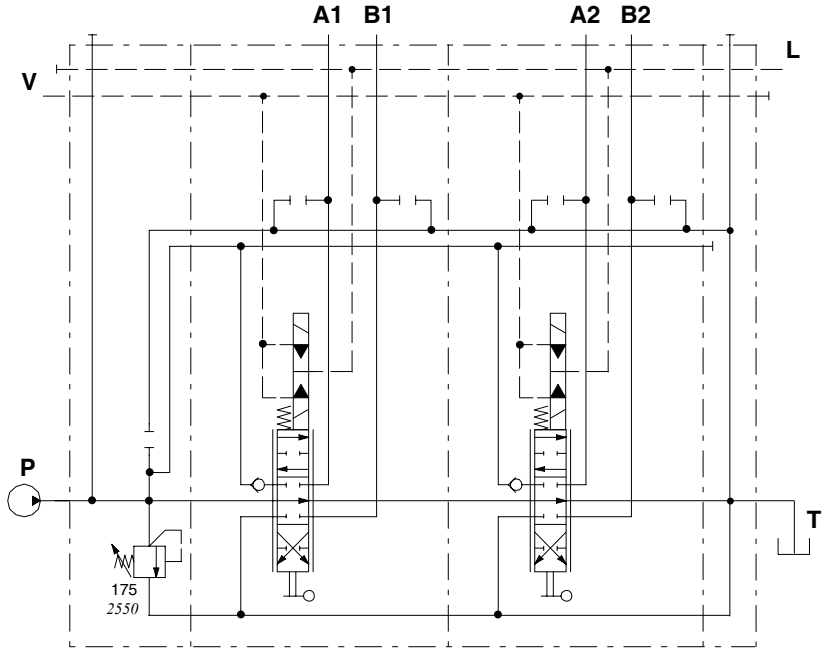


Wrenches and tightening torques
X = allen wrench 6 - 24 Nm *(17.7 lbft)*



COLLECTOR KIT CODE		
Type	**Code ***	**Description**
KE1S0	5KE1S00030	Kit for 1 sections
KE2S0	5KE2S01330	Kit for 2 sections
KE3S0	5KE3S01330	Kit for 3 sections
KE4S0	5KE4S01330	Kit for 4 sections
KE5S0	5KE5S01330	Kit for 5 sections
KE6S0	5KE6S01330	Kit for 6 sections
KE7S0	5KE7S01330	Kit for 7 sections

NOTE (*) – Codes are referred to **BSP** thread



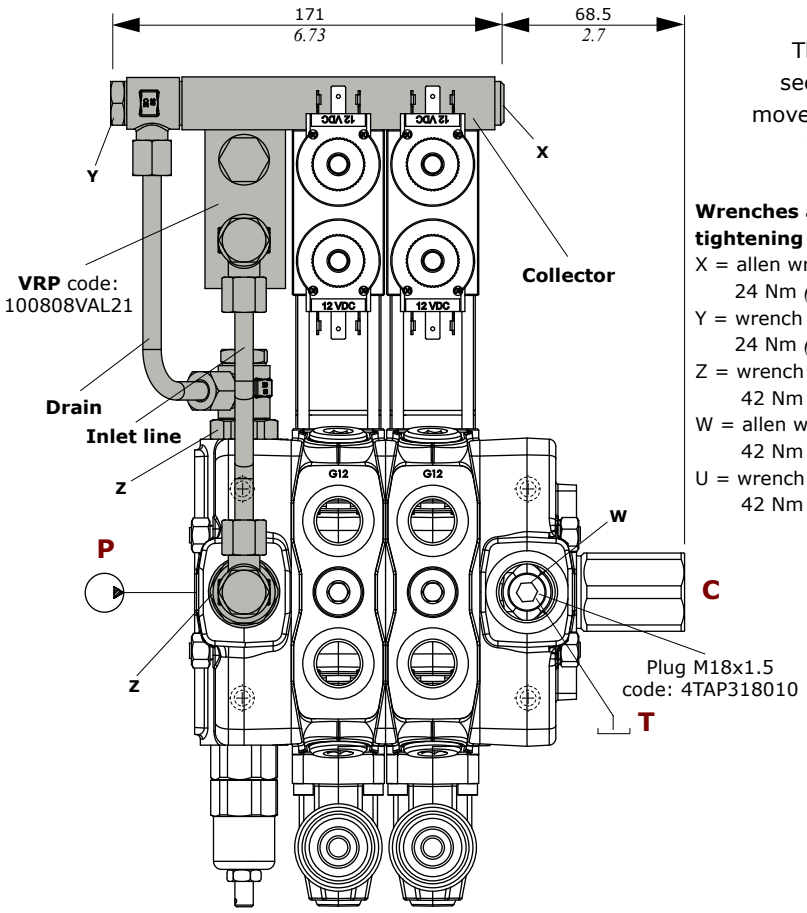
Description example:
SD8/2/AC(YG3–175)/1**8ED3**L/1**8ED3**L/RC-**KE2S0**-**24VDC**

"A" side spool positioners

8ED3 type ON/OFF electro-hydraulic control

Collector kit with internal pilot and drain lines

The kit consist of a collector with **VRP** pressure reducing valve and relative pipes.

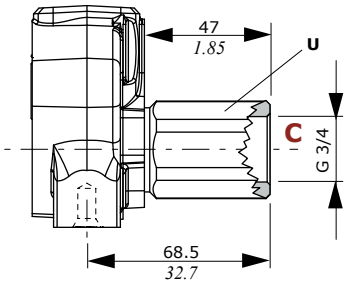


Wrenches and tightening torques

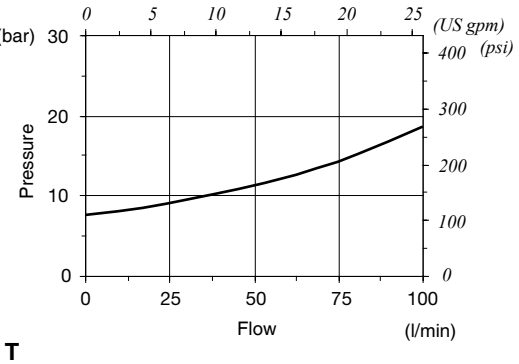
X = allen wrench 6
24 Nm *(17.7 lbft)*
Y = wrench 19
24 Nm *(17.7 lbft)*
Z = wrench 27
42 Nm *(31 lbft)*
W = allen wrench 8
42 Nm *(31 lbft)*
U = wrench 34
42 Nm *(31 lbft)*

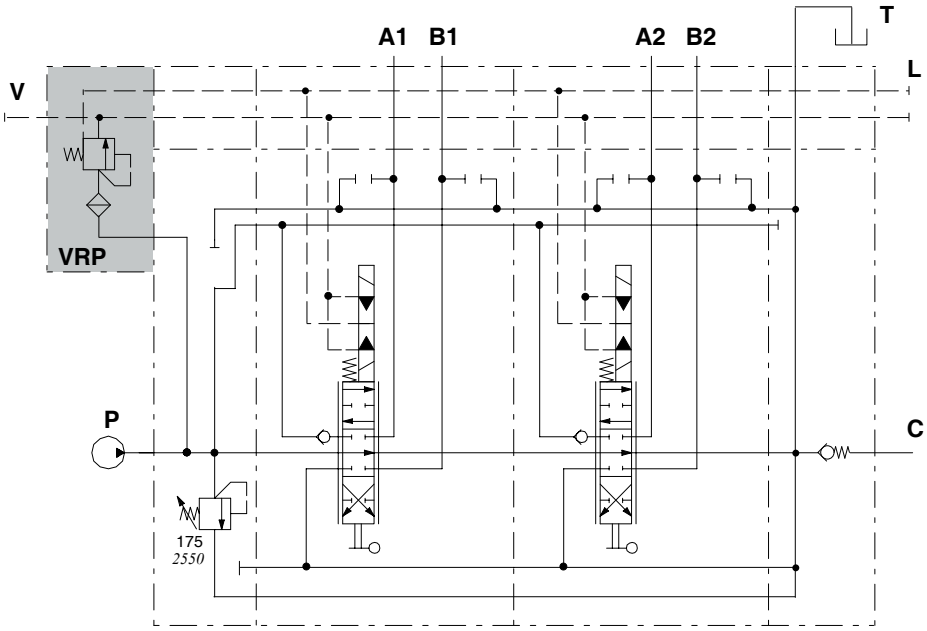
VRE backpressure valve

The valve is assembled on the free flow of the outlet section in order to create the backpressure required to move the 8ED3 piston control. RV outlet section complete with valve and tapered plug, (code X047710010).
For RV complete outlet cover see page 47.



VRE valve - pressure drop from P to C





Description example:
SD8/2/AC(YG3-175)/18ED3L/18ED3L/RV-KE2R3-12VDC

VRP valve operating features

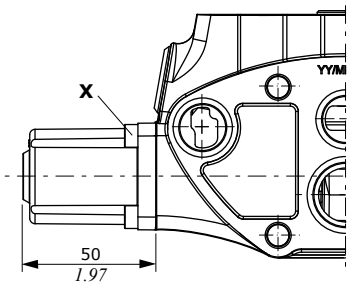
Outlet pressure ..... : 25 bar
(360 psi)
Max. flow ..... : 8 l/min
(2.1 US gpm)

COLLECTOR KIT CODE		
Type	**Code ***	**Description**
KE1RE	5KE1R31330	Kit for 1 sections
KE2RE	5KE2R31330	Kit for 2 sections
KE3RE	5KE3R31330	Kit for 3 sections
KE4RE	5KE4R31330	Kit for 4 sections
KE5RE	5KE5R31330	Kit for 5 sections
KE6RE	5KE6R31330	Kit for 6 sections
KE7RE	5KE7R31330	Kit for 7 sections
KE8RE	5KE8R31330	Kit for 8 sections
KE9RE	5KE9R31330	Kit for 9 sections

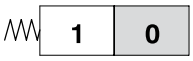
NOTE (*) – Codes are referred to **BSP** thread

"A" side spool positioners

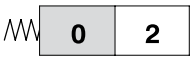
2 positions, with spring return 19 and 20 type



19 type
with spring return in neutral position
from position 1

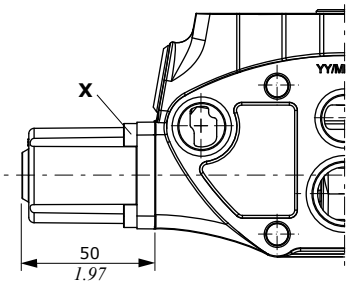


20 type
with spring return in neutral position
from position 2

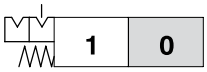


Wrenches and tightening torques
X = allen wrench 4 - 6.6 Nm *(4.9 lbft)*

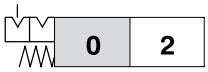
2 positions, with detent 15 and 16 type



15 type
detent in pos. 1 and neutral



16 type
detent in pos. 2 and neutral



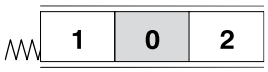
Wrenches and tightening torques
X = allen wrench 4 - 6.6 Nm *(4.9 lbft)*

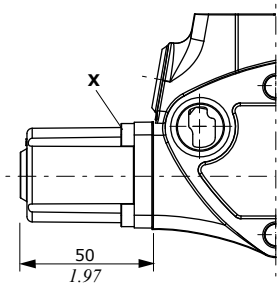
Features
Locking-unlocking force..... : 300 N *(67.44 lbf)*

Particular positioner kits for special spools

8CR type

3 positions with spring return in neutral and reduced spool stroke: **for 8F spool**.

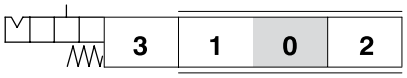


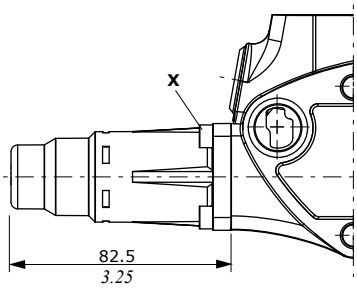


Wrenches and tightening torques
X = allen wrench 4 - 6.6 Nm *(4.9 lbft)*

13C type

4 positions with spring return in neutral and detent in position 3: **for 5B spool**.

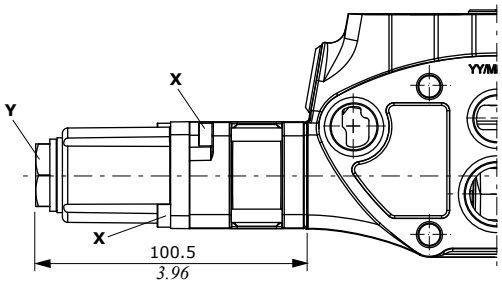




Wrenches and tightening torques
X = allen wrench 4 - 6.6 Nm *(4.4 lbft)*

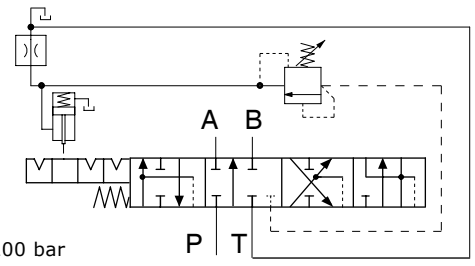
14A type

Control kit with detent in position 1, 2 and 3, kick-out in position 0: **for 5(14A) spool**.



Wrenches and tightening torques
X = allen wrench 4 - 6.6 Nm *(4.9 lbft)*
Y = wrench 24 - 9.8 Nm *(7.2 lbft)*

Features
Release pressure . . . . . : from 20 to 200 bar
(from 290 to 2900 psi)

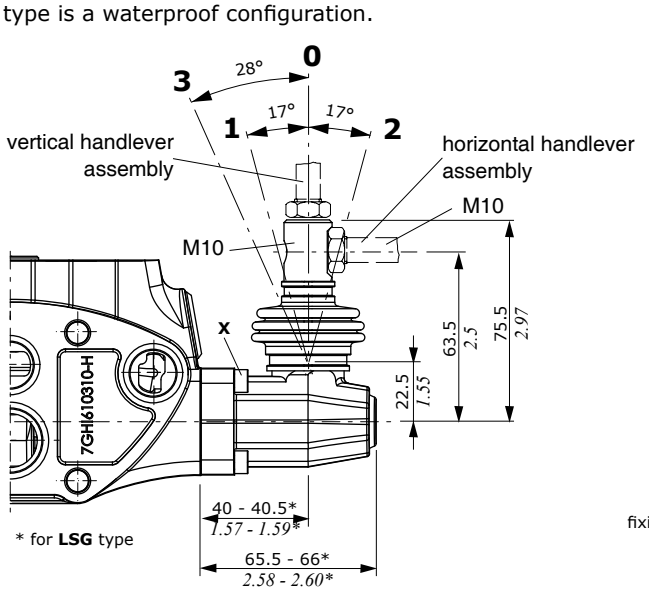


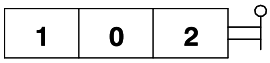
"B" side option

Lever control

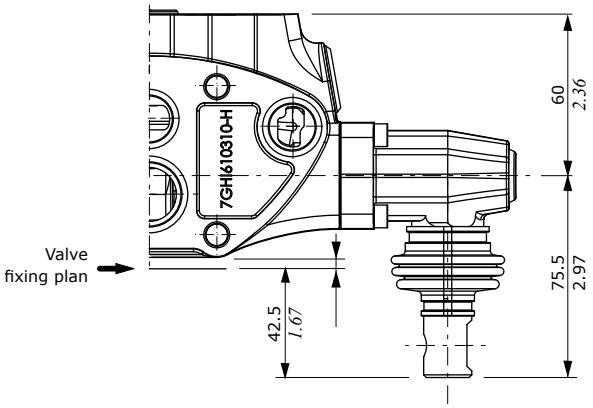
L - LSG types

Aluminium lever pivot box with protective rubber bellow; it can be rotated 180° (configuration **L180**).
LSG type is a waterproof configuration.





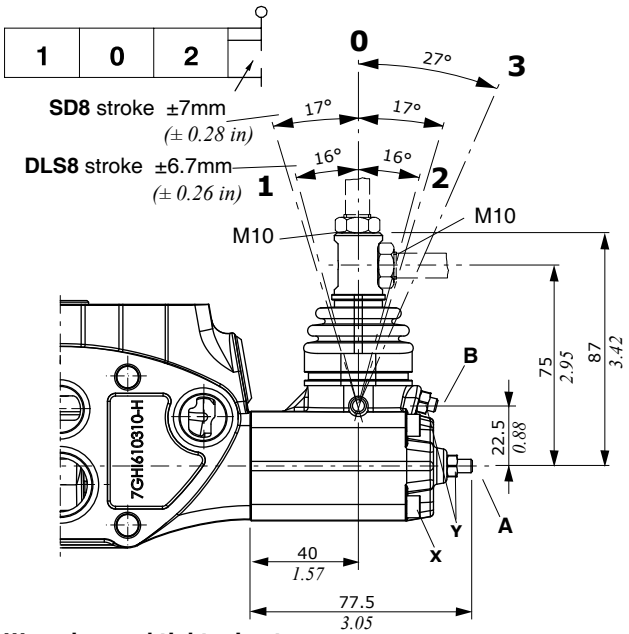
L180 - LSG180 configurations



Wrenches and tightening torques
X = allen wrench 4 - 6.6 Nm *(4.9 lbft)*

LF3 type

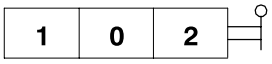
Zama lever pivot box with protective rubber bellow; it is equipped with two screws for spool stroke adjusting. It can be rotated 180° (**LF3180** configuration).



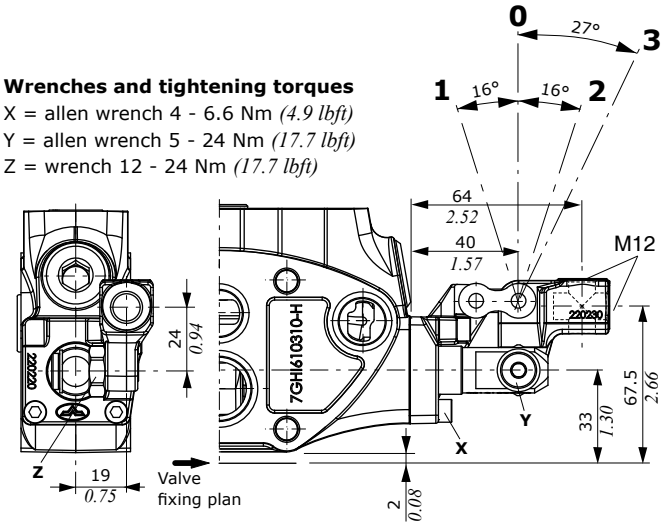
Wrenches and tightening torques
X = allen wrench 4 - 6.6 Nm *(4.9 lbft)*
Y = allen wrench 8 - 6.6 Nm *(4.9 lbft)*
A - Screw for stroke limiter on position 1: wrench 2.5
B - Screw for stroke limiter on position 2: wrench 2.5

LB type

Steel and cast iron construction.
The drawing represents **LB4** configuration with pivot placed above on the right.



Wrenches and tightening torques
X = allen wrench 4 - 6.6 Nm *(4.9 lbft)*
Y = allen wrench 5 - 24 Nm *(17.7 lbft)*
Z = wrench 12 - 24 Nm *(17.7 lbft)*



NOTES – The pivot can be assembled placed down on the left (**LB1** execution), or it can be rotated 90°; in this case, the interference with other lever controls has to be checked. For further information please contact our Sales Dpt.

"B" side option

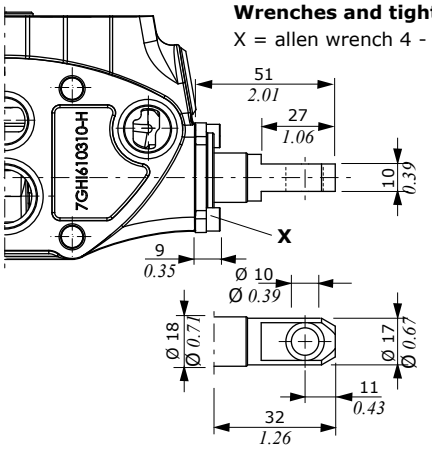
Control prearrangement

SLP type

Mechanical control with dust-proof plate kit.

1	0	2

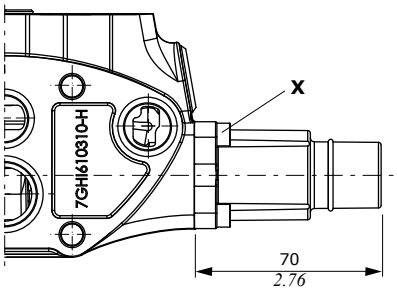
Wrenches and tightening torques
X = allen wrench 4 - 9.8 Nm *(7.23 lbft)*



SLCY type

Protection cap.

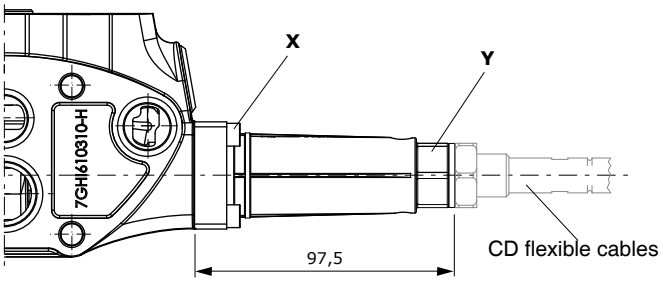
1	0	2



Wrenches and tightening torques
X = allen wrench 4 - 9.8 Nm *(7.23 lbft)*

TQ cable remote control

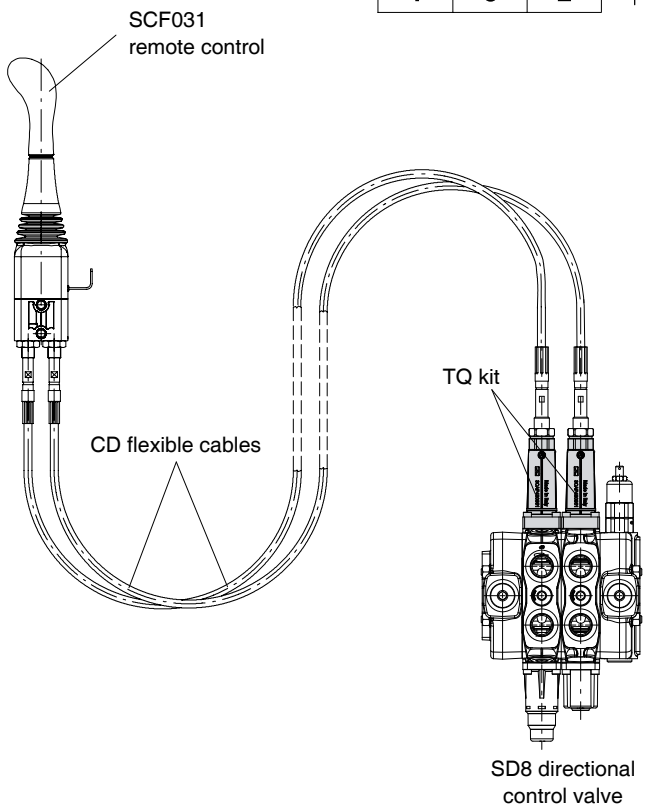
Waterproof cap prearranged for remote control with flexible cable.



Wrenches and tightening torques
X = allen wrench 4 - 7.5 Nm *(5.53 lbft)*
Y = wrench 24

NOTE – For further information about remote controls with flexible cables, please see D1WWEF02E catalogue.

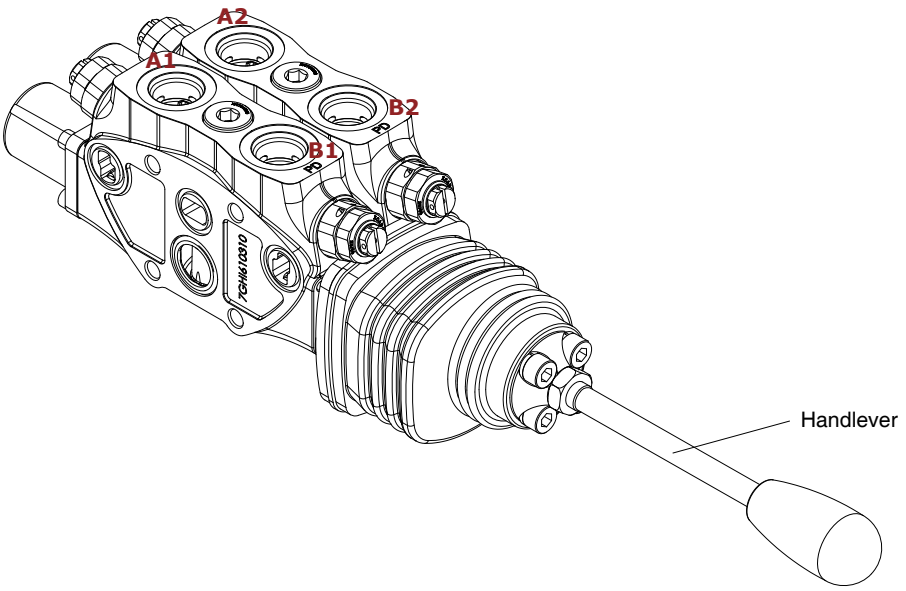
1	0	2

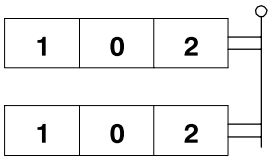


"B" side option

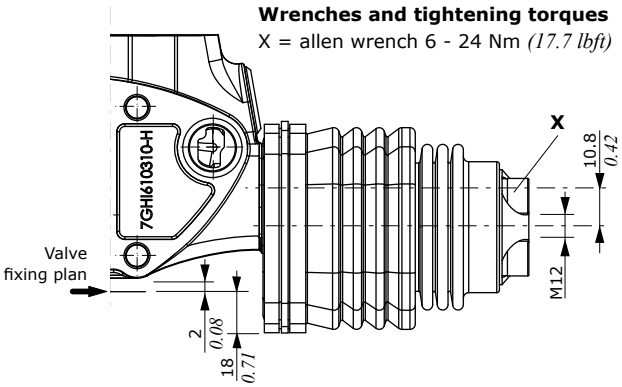
LCB joystick

Joystick lever for 2 section operation

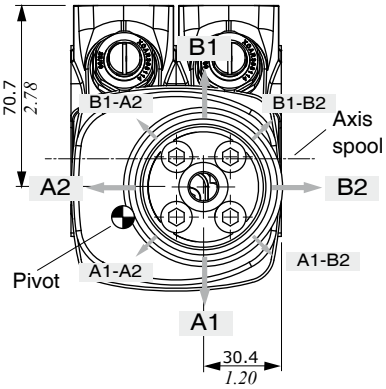




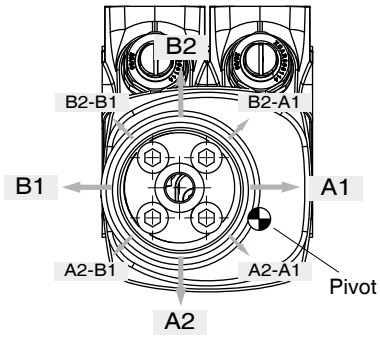
Dimensions and movement scheme for left inlet directional valve



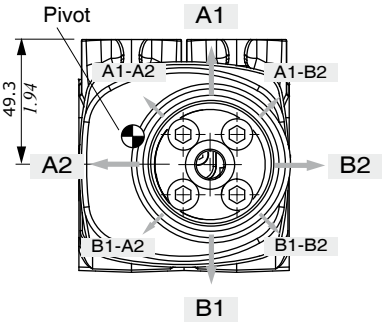
LCB1 configuration with pivot placed below on the left



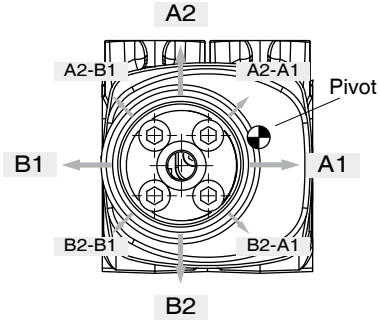
LCB2 configuration with pivot placed below on the right



LCB3 configuration with pivot placed above on the left



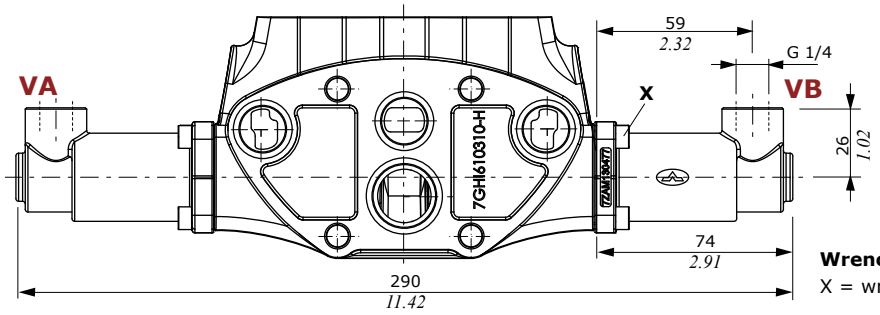
LCB4 configuration with pivot placed above on the right



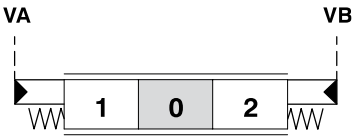
Complete controls

Proportional hydraulic controls

It can be used with standard spools and dedicated elements (see page 22); without seals on spool.

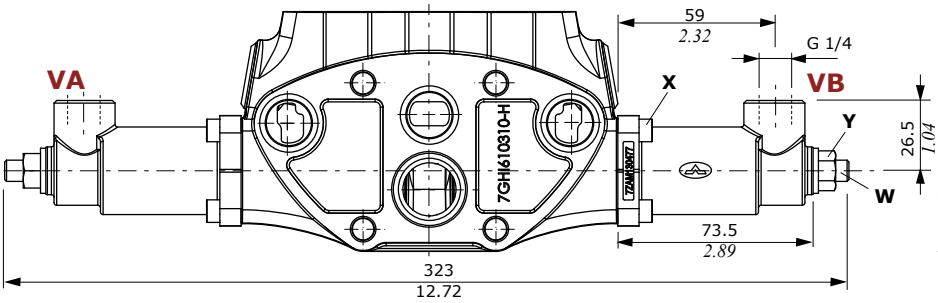


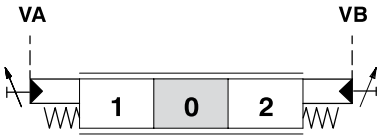
8IM type



Wrenches and tightening torques
X = wrench 4 - 6.6 Nm *(4.9 lbft)*

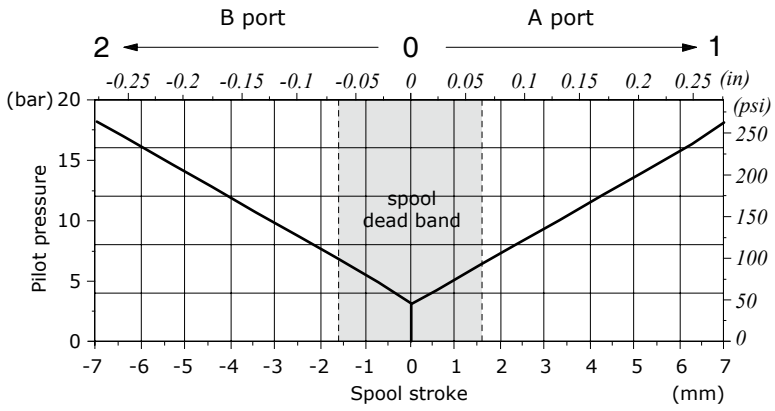
8IMF3 type
Execution with screws for spool stroke adjusting



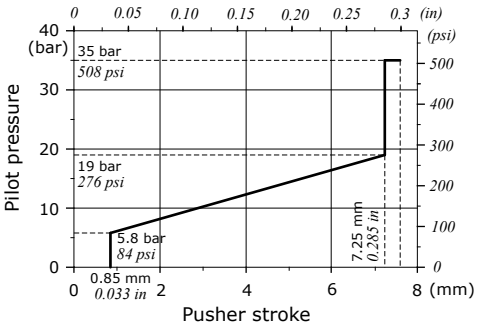


Wrenches and tightening torques
X = allen wrench 4 - 6.6 Nm *(4.9 lbft)*
Y = wrench 13 - 24 Nm *(17.7 lbft)*
W = wrench 4

Pressure - stroke diagram



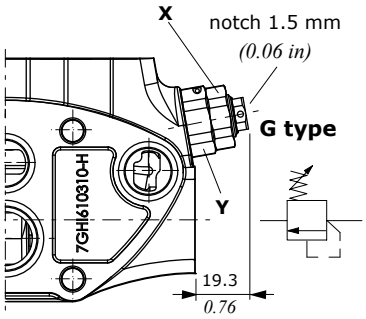
Control curve with step on VA and VB port: 033 type

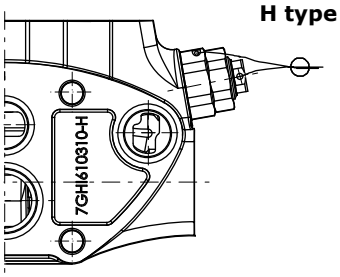


Features
Pilot pressure . . . . . : max. 30 bar *(435 psi)*

Port valves

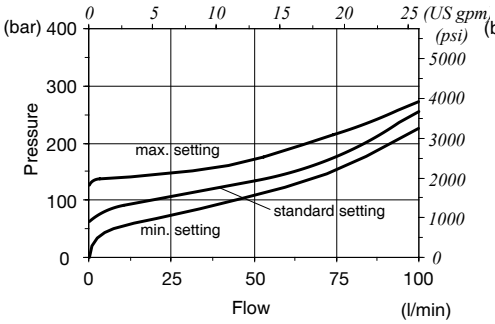
P type antishock valves





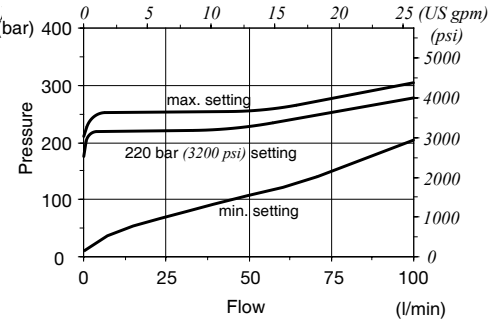
PG2 setting range

From 55 to 140 bar *(from 800 to 2000 psi)*



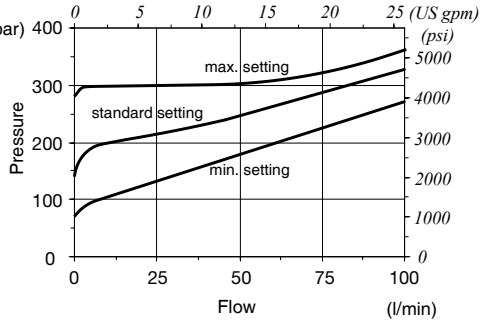
PG3 setting range

From 50 to 220 bar *(from 725 to 3200 psi)*



PG4 setting range

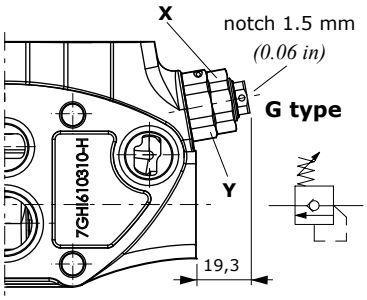
From 180 to 350 bar *(from 2600 to 5100 psi)*

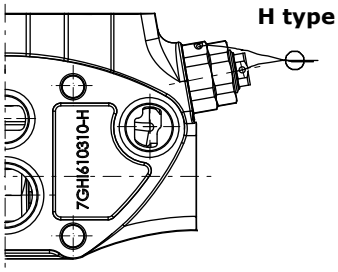


Legenda
G: adjustable with screw
H: valve set and locked

Wrenches and tightening torques
X = wrench 22 - 24 Nm *(17.7 lbft)*
Y = wrench 24 - 42 Nm *(31 lbft)*

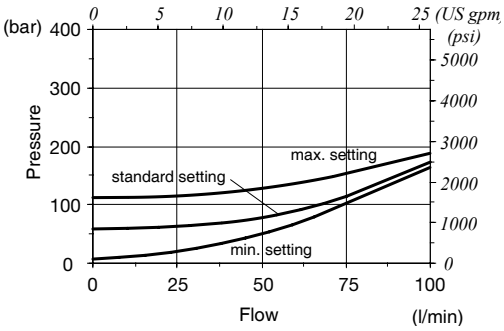
U type anti-shock and anti-cavitation valves





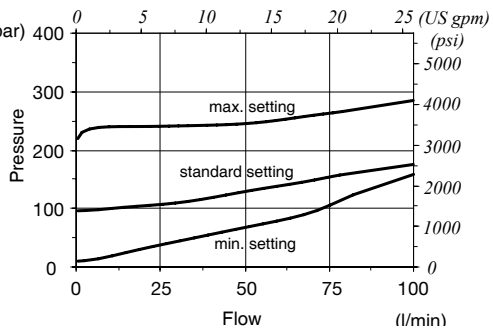
UG2 setting range

From 35 to 90 bar *(from 510 to 1300 psi)*



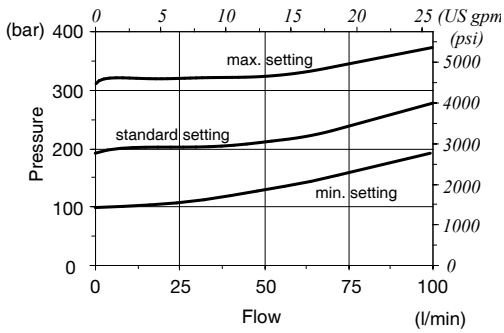
UG3 setting range

From 100 to 250 bar *(from1450 to 3600 psi)*

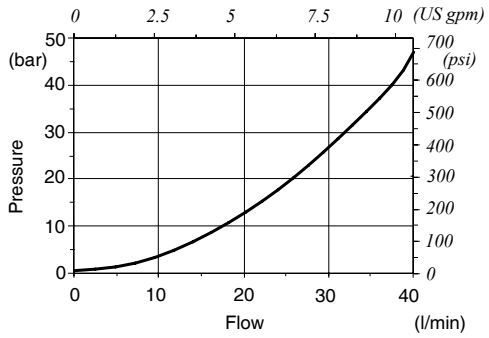


UG4 setting range

From 180 to 350 bar *(from 2600 to 5100 psi)*



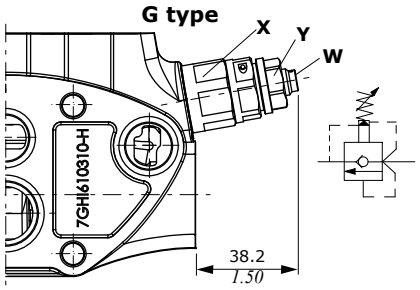
P ⇒ T pressure drop



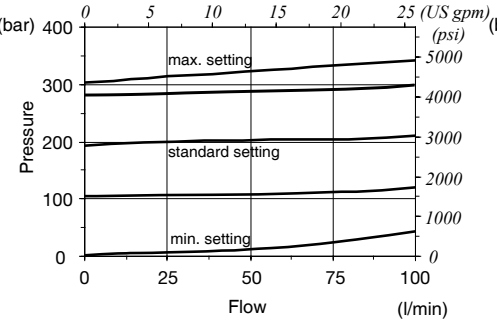
Legenda
G: adjustable with screw
H: valve set and locked

Wrenches and tightening torques
X = wrench 22 - 24 Nm *(17.7 lbft)*
Y = wrench 24 - 42 Nm *(31 lbft)*

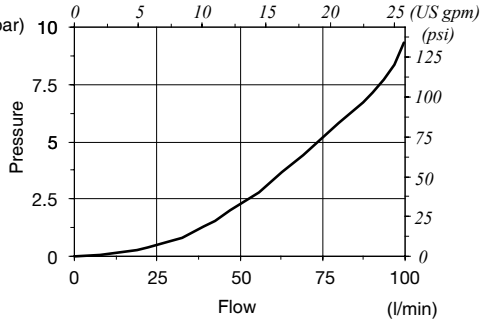
UXW type pilot operated anti-shock and anticavitation valve



Range setting



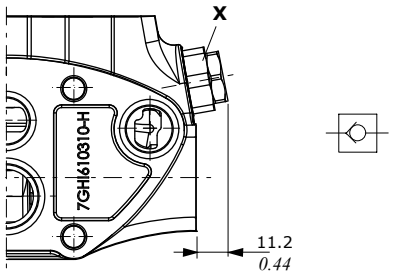
Pressure drop in anticavitation



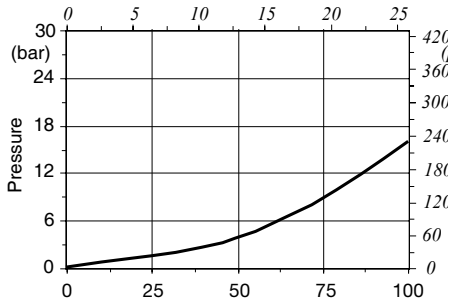
Legenda
G: adjustable with screw

Wrenches and tightening torques
X = wrench 24 - 42 Nm *(31 lbft)*
Y = wrench 17 - 24 Nm *(17.7 lbft)*
W = allen wrench 5

C anticavitation valve

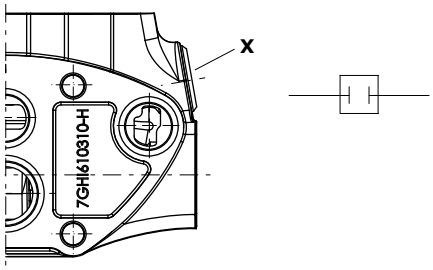


Pressure drop



Wrenches and tightening torques
X = wrench 24 - 42 Nm *(31 lbft)*

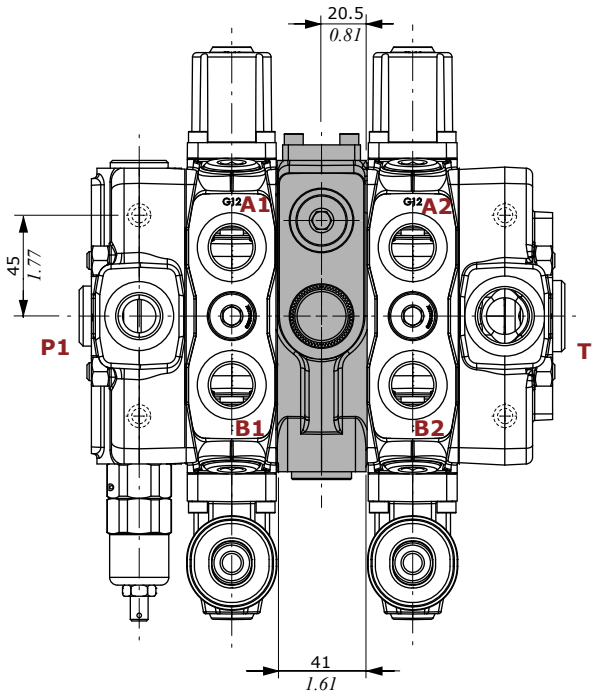
Valve blanking plug

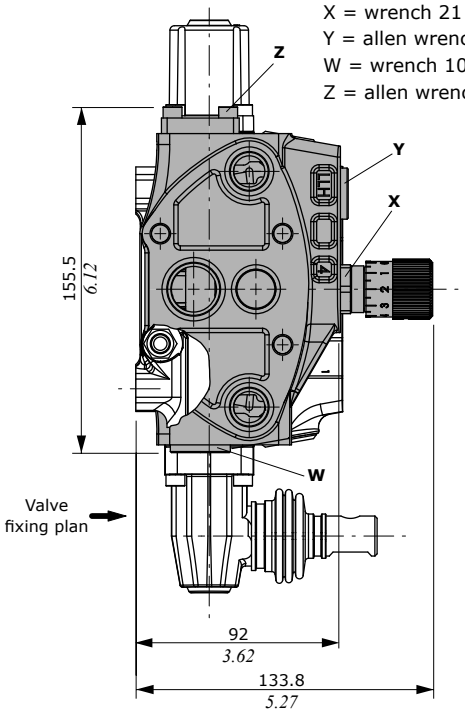


Wrenches and tightening torques
X = allen wrench 10 - 42 Nm *(31 lbft)*

DFG pressure compensated flow divider section

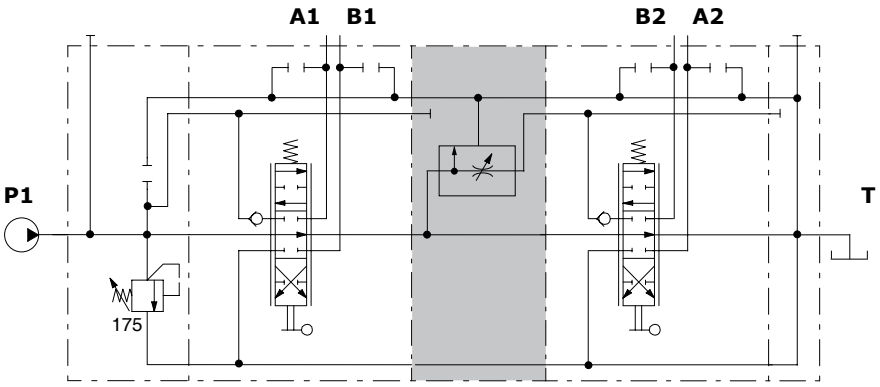
The flow on the downstream sections can be adjusted from 0 to 80 l/min *(21 US gpm)* by means of graduated handwheel; exceeding setting flow goes to tank.





Wrenches and tightening torques
X = wrench 21 - 24 Nm *(17.7 lbft)*
Y = allen wrench 8 - 24 Nm *(17.7 lbft)*
W = wrench 10 - 42 Nm *(31 lbft)*
Z = allen wrench 4 - 6.6 Nm *(4.9 lbft)*

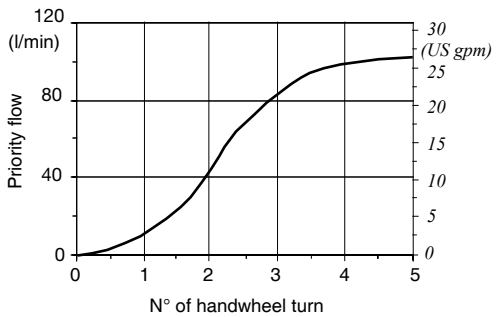
Hydraulic circuit



Description example:
SD8/2/AC(YG3-175)/18L/**DFG**/18L/RC

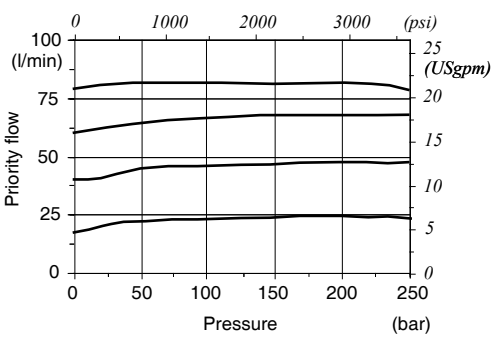
Flow regulation diagram

P= 100 bar *(1450 psi)*



Pressure-flow diagram

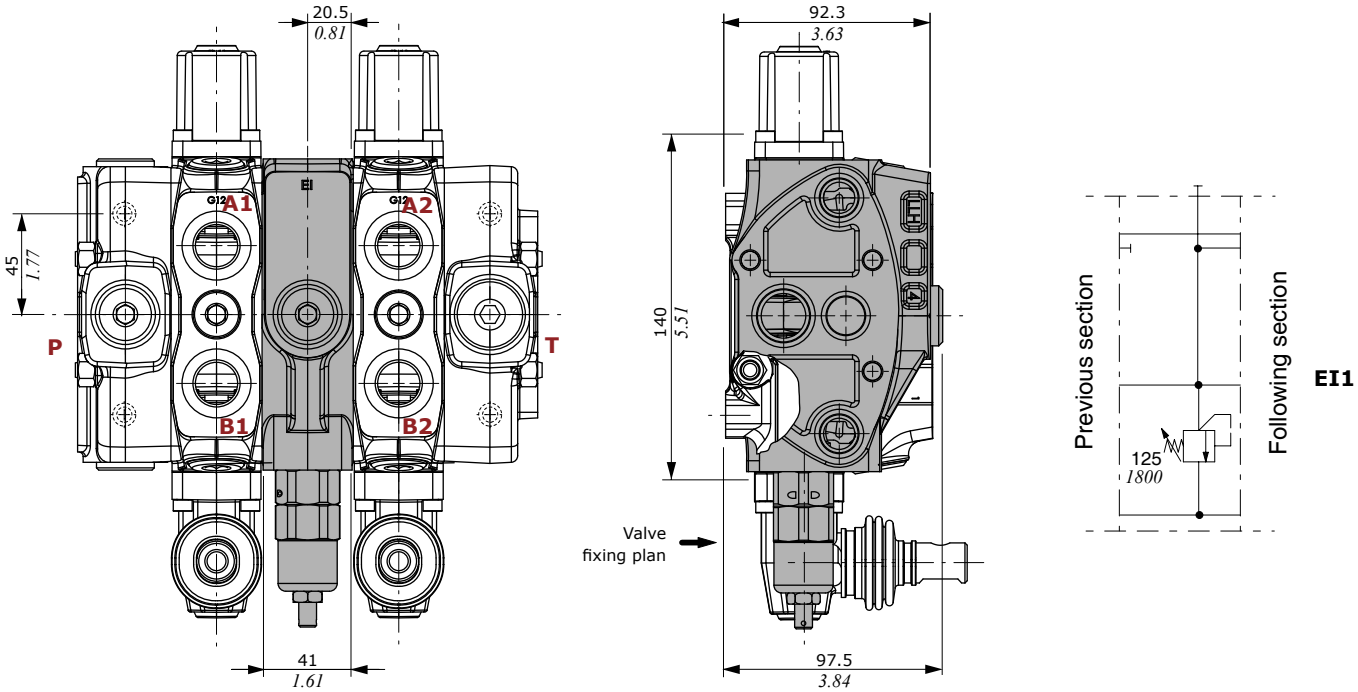
Q_{in}= 110 l/min *(29 US gpm)*



EI relief valve sections

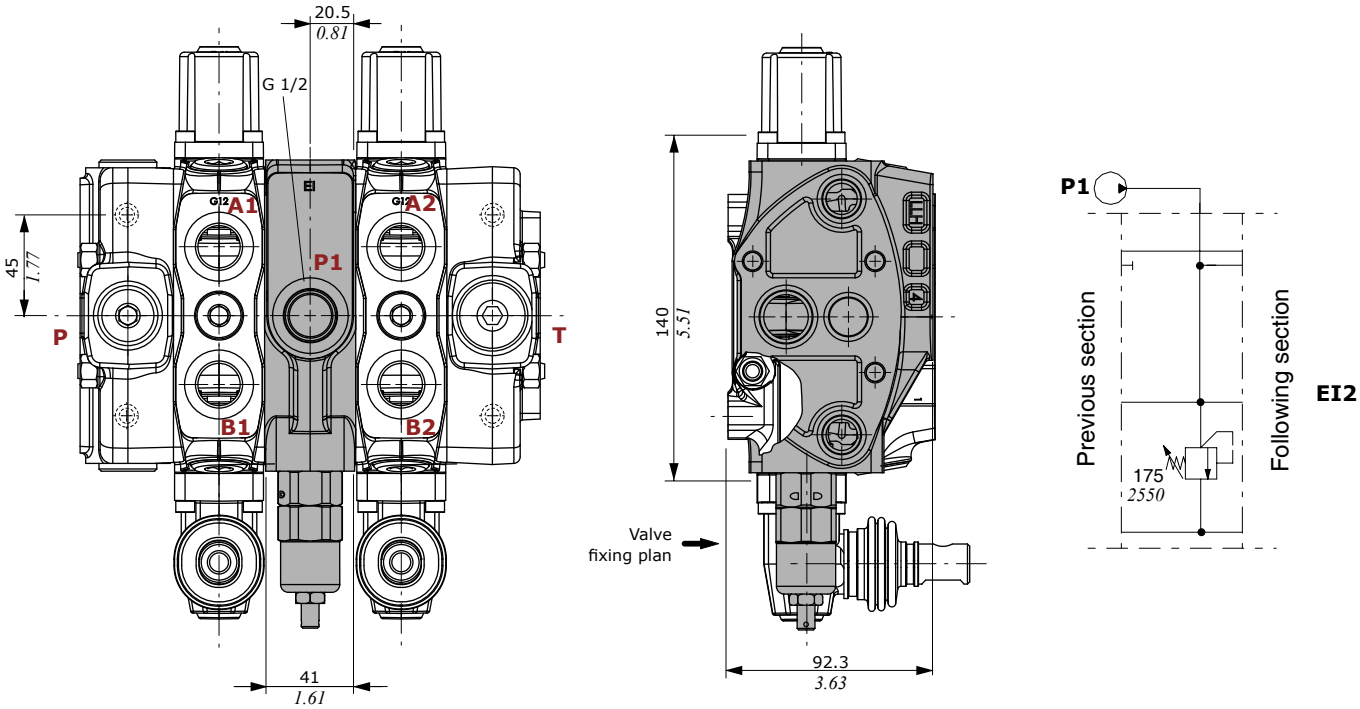
The operation of upstream section excludes the EI downstream section; the pressure of the downstream sections should be adjusted at least 20 bar *(290 psi)* below the relief valve setting. The relief cavity is the same as the one in the inlet cover; it allows to use direct operated (Y type) as well as pilot operated (X type) relief valves.
EI2 execution is prearranged for a second inlet.

EI1 execution



Description example: SD8/2/AC(YG3-125)/18L/**EI1(YG3-120)**/18L/RC

EI2 execution

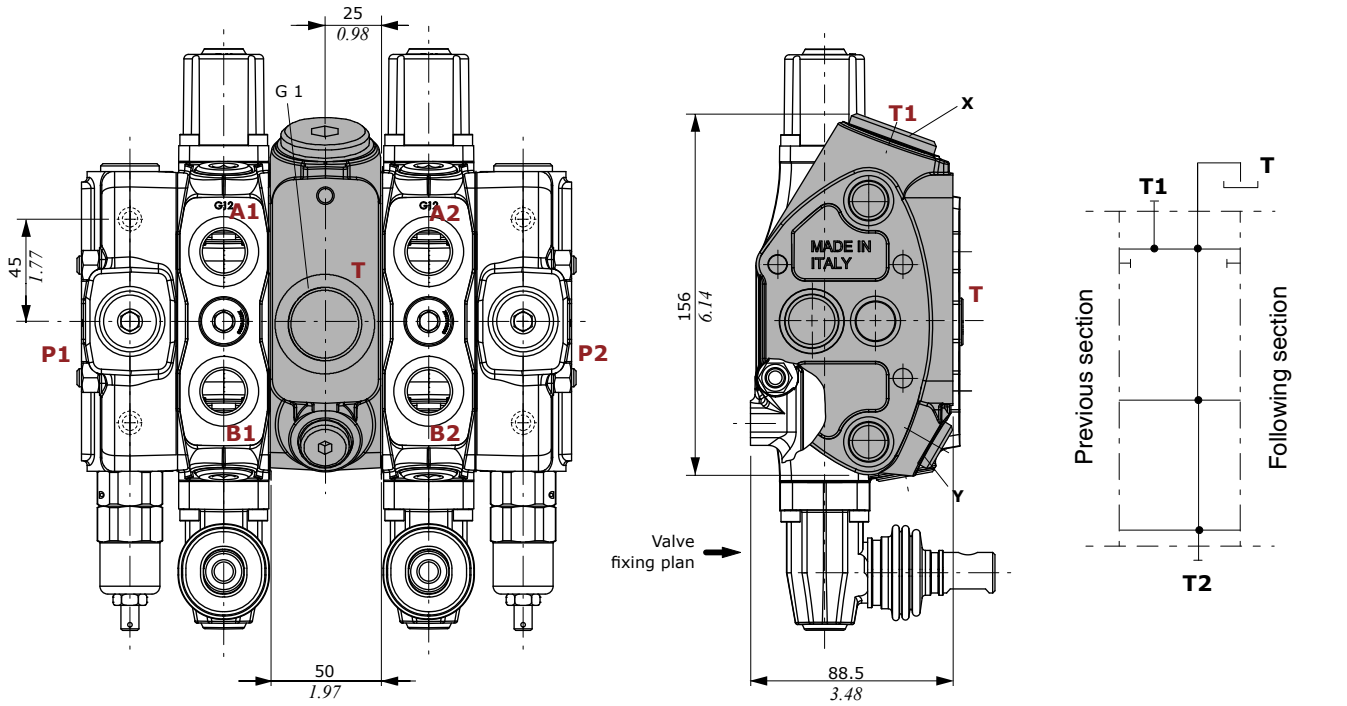


Description example: SD8/2/AC(YG3-175)/18L/**EI2(YG2-80)**/18L/RC

CS mid return manifold sections

Mid return manifolds for directional valve with both left and right inlet; they allow 2 indipendent circuits with common outlet.

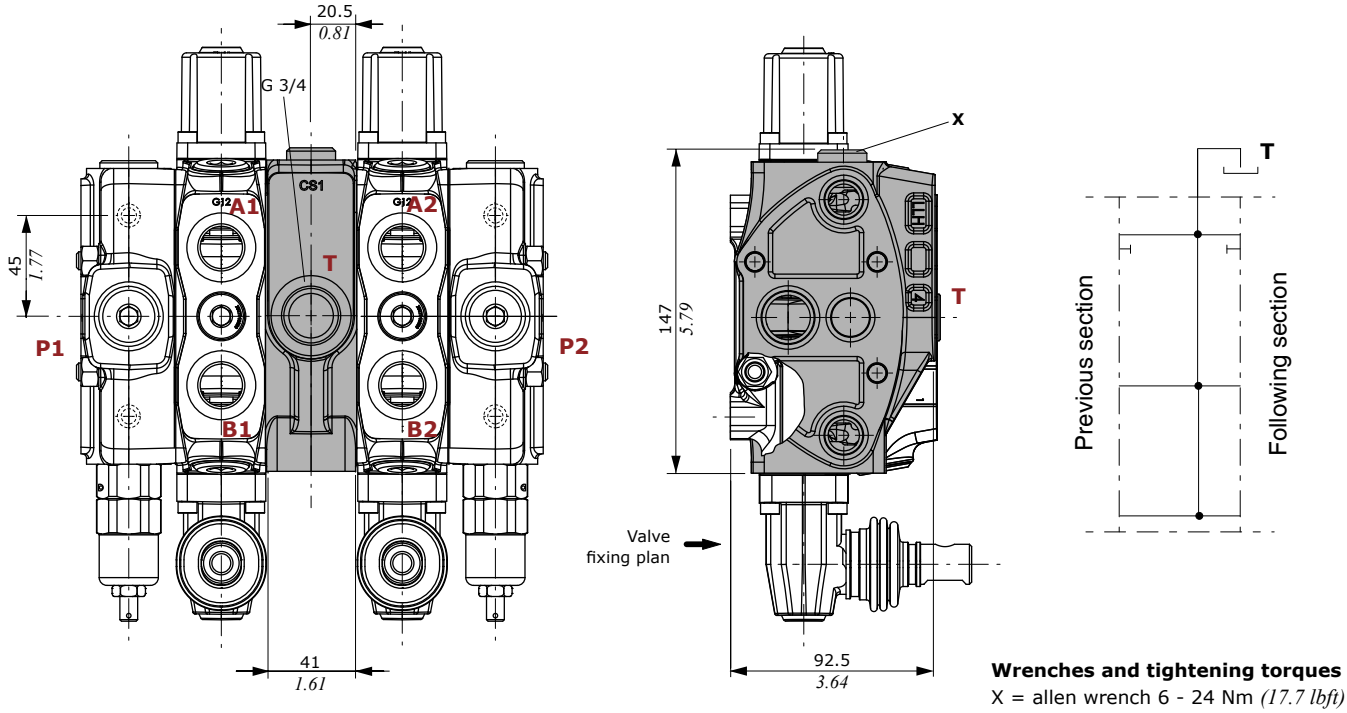
CST type



Description example: SD8/2/AC(YG3-175)/18L/**CST**/18L/BC(YG3-175)

Wrenches and tightening torques
X = allen wrench 12 - 42 Nm *(31 lbft)*
Y = allen wrench 6 - 24 Nm *(17.7 lbft)*

CS1 type



Description example: SD8/2/AC(YG3-175)/18L/**CS1**/18L/BC(YG3-175)

Wrenches and tightening torques
X = allen wrench 6 - 24 Nm *(17.7 lbft)*